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AMERICAN MEDICINE AND THE WAR

PRESIDENT'S ADDRESS

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CHICAGO

We meet this year in the midst of an extensive global war. It is not a novel experience for the American Medical Association, which was organized in 1847 in the midst of our war with Mexico. Since then the American Medical Association has lived through and its members have taken part in the Civil War, the war with Spain, the Boxer Rebellion, the Mexican Border activities, World War I and the present world war.

The Association has been vitally interested in the prosecution of the war effort and is lending all its efforts to aid in a speedy and a successful winning of the war.

At present some 55,000 physicians are in the armed forces. They entered on a voluntary basis. Many were just reaching the pinnacle of success, many had served shortened periods of internships and residencies, and others ceased their research to serve their country. Who could say that these physicians had any selfish or ulterior motives? I would like to stress again that their response to duty was purely voluntary. Unfortunately many persons, both in and out of the armed forces, do not realize this and believe that some sort of a special enlistment was provided for the physician.

I would pay my respects also to another group of physicians whom I shall call the unsung heroes of this war. I refer to the older practitioners of medicine who remained behind. All of them are doing more than double duty. Many who had retired from active practice reentered the practice of medicine; some who had partially retired gave up their contemplated leisure and are working harder than ever before. Not only have these physicians carried a heavier load in practice and some in teaching, but others in addition have aided the government in various ways such as examining selectees, aiding civilian defense, advising the Office of Price Administration and helping other governmental agencies.

It would be difficult to enumerate all the activities of the Association in the war effort; I will mention just a few of them. The publication of *War Medicine* has been a scientific success from its very beginning; and it has been called the Medical Officer's Bible. The Council on Pharmacy and Chemistry has cooperated with many government agencies in passing on drugs and biologic preparations used by the armed forces. The Council on Physical Therapy has aided manufacturers of such devices in meeting the needs of the armed forces and the civilian medical profession. The Council on Industrial Health has participated in many government conferences relating to the maintenance of industrial health during the war, the importance of which in production of war equipment is self evident. The Bureau of Health Education has made its radio programs available to the highest ranking medical officers of our armed forces both here and abroad. The headquarters office has maintained a liaison office with the Procurement and Assignment Service for Physicians, Dentists and Veterinarians. The Council on Medical Education and Hospitals, the Bureau of Exhibits, the Bureau of Legal Medicine and Legislation have all contributed to and aided various governmental agencies in the winning of the war. The Council on Medical Service is analyzing plans for extending a high quality of medical care to all the people.

All of these increased activities have gone on with a sharp reduction in personnel in the headquarters office. Many of the employees have entered the armed forces and others have entered government services. The loss of key personnel is a serious handicap. The General Manager and the Editor have given unsparingly of their time and effort to the various governmental agencies whenever their services have been requested.

HEALTH OF THE NATION

Despite the large number of physicians in the armed forces, the people of this country have never enjoyed such good health as now. The death rate is the lowest in our history except for a slight, not serious, rise last year. Fortunately there have been no major epidemics such as the influenza epidemic in the last war. The venereal diseases are almost completely controlled, thanks to the sulfonamide drugs and penicillin, so that the medical schools have difficulty in obtaining enough patients for purpose of teaching the students. Tuberculosis, which often shows a rise during a war, has now reached an all time low. Pneumonia, called by Sir William Osler the friend of the aged, is no longer a danger as it was before the advent of the sulfonamide drugs. Cerebrospinal meningitis, which formerly had a death rate of 60 to 70 per cent, now has a mortality of about 5 per cent. During the past year more than 3,000,000 babies were born in this country, with the lowest maternal and infant death rates in our entire history, and this in the midst of the war effort. All in all, the wartime health picture in this country is most satisfactory.

HEALTH OF THE TROOPS

Never before have the troops of any nation enjoyed such good health, thanks to the widespread use of preventive measures of various sorts and to the broad vision of the Surgeons General of the Army, Navy and Public Health Service. Whereas disease in previous wars killed more men than bullets, the reverse is true in this war. The war injured likewise are receiving the finest surgical care possible, thanks to the splendid medical education of our young medical officers and also owing to the fact that in this war the medical officers are in front with the troops. Note the high mortality among the medical officers. In World War I the mortality among wounded not killed outright was about 9 per cent; in the present war it is about 2 per cent.

President's address before the American Medical Association at the Ninety-Fourth Annual Session, Chicago, June 13, 1944.

NUTRITION OF THE NATION

The nutrition of our people is excellent. I wish to disagree with the statement that one third of our people are poorly nourished. No longer do many physicians see cases of rickets, scurvy and other diseases due to malnutrition. There are isolated areas in this country where pellagra is found. This is a local problem and can readily be taken care of by the local medical profession; with proper management these diseases can be cured. Their prevention is being given every possible consideration.

I believe the question of nutrition is intimately associated with educating people to eat the proper kind of foods. Although many foods have been rationed, little difficulty has been encountered in maintaining a well balanced diet, and, in a certain measure, rationing has achieved desirable results.

USE AND ABUSE OF VITAMINS

Closely allied with the subject of nutrition is the widespread indiscriminate promotion and use of vitamins. It has been variously estimated that the people in this country will spend the better part of $250,000,000 this year for various vitamin products. I do not wish to discredit the enormous progress that has been made in this field. The advances are most impressive. The treatment of some conditions requires vitamins. But these are problems for the physician and not for the radio broadcaster and the newspaper. Certainly the people in this country are not in such a state of malnutrition as to require the use of $250,000,000 worth of vitamins. The excessive claims made for vitamins are beyond any basic medical evidence.

It seems to me that you and I and the American Medical Association have a serious obligation to our patients and to the public at large. We must embark individually and collectively on a program of education as well as a program of debunking. To listen to and to read the claims for vitamins, one is impressed by the close parallelism to the "patent medicine" advertisement of twenty-five years ago. Here again the solution to this problem rests with every member of the profession.

PROBLEMS OF THE AGED

As a result of the wonderful achievements of medicine in reducing mortality and with the increase in the span of life from some forty years in 1890 to approximately sixty-five years in 1943, more and more people reach the time of life when they become subject to the degenerative diseases, thereby creating new problems in medical care. Naturally there will be an ever increasing number of people in the older age group. In 1890, 2.7 per cent of our population were over 65 years of age; in 1900, 4 per cent; at the present time 9 per cent of our population are over 65.

With an increase in our understanding of the diseases of old age and with the improvements of surgical technic, we may reasonably expect a still further increase in the population over 65 years. In my own special field the operative mortality of the prostatic patient was 15 to 20 per cent. At the present time it is as low as ½ of 1 per cent.

Our new health attainments have an important social implication. As more and more people reach this age there will probably be more and more unable to secure paying positions. The medical problems of this part of our population have been and are receiving the earnest study of the profession. Many of the present diseases of old age will be under control, their prevention worked out as well as cure.

SOCIALIZED MEDICINE

Nothing has disturbed the people of this country as much as have efforts to socialize the medical profession. Not only are the physicians in this country deeply concerned, but our fellow practitioners in the armed services are vitally interested. They who are rendering such fine service to our troops wonder what they are fighting for. They entered the service of their country to preserve the American way of life, to preserve our democratic ideals and our system of private initiative, and to rid the world of dictatorships.

Naturally they are concerned lest regimentation be foisted upon them during their absence from the country.

You and I have a sacred obligation to our colleagues who are rendering such splendid service on the battle fields all over the world. Let their trust in us be truly justified.

Under our present system of medical education and practice the people of this country have enjoyed the best health record of any nation on earth. Granted that there are some areas in which there is room for improvement in medical care. They can be taken care of on a local basis. The securing of a better distribution of medical care is no reason for regimentation of the entire medical profession.

Socialized medicine cannot show a comparable achievement with the results attained with our system of practice. We must acquaint the people with the hazards that always follow in the wake of this type of practice: deterioration in the quality of medical care and medical education, abolition of free choice of physician and increased taxes due to an over expanding beaurocracy.

PREPAYMENT PLANS

In order to meet the costs of so-called catastrophic illness, various plans have been devised in this country. Many different plans are in operation in many different places. They were carefully studied and put into operation. It was obvious that they would need change as they continued to serve their patients. Many of these plans are sponsored by state and county medical societies. In thousands of industries, workers and management have continued to purchase protection for the employee and his family by insurance against sickness and hospital costs. The medical profession has never been static. It has sought only to protect the quality of medical care while attaining a wider distribution.

In every plan the physician who renders the service is the paramount factor, but the physician knows that the circumstances under which medical care is given have much to do with its quality and with his responsibility. I can assure you that these problems are today more fully accepted by the medical profession as their responsibility than by any other group, and I can promise that medical leadership will more certainly solve these problems satisfactorily than can be expected from any other group.

TO THE PHYSICIANS IN THE ARMED FORCES

And now a word to the 55,000 physicians in the armed forces in England, France, Italy, India, the South Pacific and elsewhere who cannot attend this session. The American Medical Association is deeply interested in you who are fighting the battles to preserve the American way of life. The Association is doing everything in its power to safeguard the quality and standard of medical practice during your absence and will do everything in its power to aid you when you return.

The Council on Medical Education and Hospitals has made an extensive study of existing facilities for graduate medical education and is giving thought to the establishment of further facilities so that medical officers who have had an abbreviated internship or whose residency was interrupted may, on return, complete their education. Many of you have already indicated that you wish further opportunities for study and training. Most of you will return to your homes and your practices. Some of you may wish to establish yourselves in new locations. In order to supply you with information, a new office is to be created in the headquarters of the American Medical Association.

To every physician in the armed forces has gone a questionnaire which will give him opportunity to express his needs and his opinions. The American Medical Association recognizes the voluntary gift that you have made by accepting your commissions. You have maintained for the men of our Army and Navy the lowest sickness and death rates ever achieved by any great military force. You are not forgotten; all of the medical profession assumes the obligation that the nation owes to you.

122 South Michigan Avenue.

BRONCHOPULMONARY MONILIASIS

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Bronchopulmonary moniliasis has been described as an infection of the lungs caused by Monilia albicans and is characterized by a chronic, usually progressive, course possessing a characteristic clinical picture.

Microfungi have been universal in distribution, and they are found as parasites or saphrophytes on all forms of growth or decomposition. The varieties of fungi described are numerous, but the majority have been proved to be nonpathogenic. Monilia albicans, a yeastlike fungus, belongs to the imperfecta group of fungi, which appears to be highly pathogenic to man.

Monilial infections of most of the organs of the body have been described, and the fungi have been recovered from body secretions and discharges.[1]

For some time mycotic diseases of the lung were considered to be quite rare, but recently they have been found to be more prevalent than was generally suspected. Reeves [2] reported 79 cases of bronchomycosis, of which 40 were designated as bronchomoniliasis. According to the Flinns [3] a review of the literature in 1931 revealed that only 11 cases had been reported in the United States at that time. Today, however, moniliasis of the lung has been universally recognized.

MODE OF INFECTION

It has been found that the monilial fungus is widely distributed in the tropical and temperate climates. The incidence has been reported as high in the Southern United States.[2] It has been found that inhalation is an important factor in the contraction of the disease, and this has been attributed to the fact that the monilial fungus is exceedingly resistant to drying and can exist for long periods of time in a dusty, dry environment.[4] Monilias have been found to exist as saphrophytes in the human mouth and secretions of the body.[5] As a rule they are nonvirulent, but under suitable conditions they may become pathogenic to lung tissue. Such disease entities as bronchitis, pneumonia and influenza provide proper environment for the growth of the monilias. Ikeda [4] set forth two factors which he believed essential in the development of bronchopulmonary moniliasis, namely the inhalation of the monilia fungus and a lowered resistance of the lining membranes of the bronchi or alveoli which would provide a suitable soil for the growth of monilias.

CLINICAL FEATURES

According to Ikeda [6] bronchopulmonary moniliasis may be divided into several forms characterized by various symptoms and clinical courses. The mild form is characterized by slight cough, scanty sputum and, as a rule, normal temperature. These are the cases in which a diagnosis of chronic bronchitis is made until a more severe group of symptoms or signs make their appearance. The moderate form has as its outstanding symptoms and signs a pronounced cough, sputum which is tenacious and mucopurulent, and a low grade fever. Clinically this type may regress or have remissions and is frequently mistaken for chronic bronchitis, bronchiectasis or even bronchial asthma. The severe form is characterized by dyspnea, night sweats, cough, loss of weight and sputum which is sticky and glairy. It has an odor described as sweetish or yeastlike. The clinical findings in this type resemble diffuse bronchitis, bronchopneumonia, pulmonary fibrosis or pulmonary abscess.

DIAGNOSIS

The diagnosis of bronchopulmonary moniliasis cannot be made on the clinical or radiologic findings alone. Ultimately the laboratory must be the deciding agent in the diagnosis. However, the mere demonstration of monilial fungi in the sputum does not confirm a diagnosis of moniliasis. Woolley,[7] in a series of sputum studies, found that of 141 patients examined in a sanatorium in Tuscon, Ariz., 17 gave mycologic findings and of this positive group 7 were positive for Monilia albicans. To make a proper laboratory diagnosis, staining and cultural methods should be used, and, in addition, animal inoculation must be employed to determine the pathogenicity of the strain of monilia. Castellani,[8] one of the early workers in this field, postulated that the presence of monilias offered three possibilities: first, that the monilias were nonpathogenic and nonvirulent; second, that they were secondary invaders, and, third, that they were virulent and the true basis of bronchopulmonary disease. His criteria for the latter was the production of lesions in the lungs of animals inoculated with the isolated monilias.

Radiologically it has been noted that the process starts in the hilar region of the lung and spreads outward along the bronchovascular markings until the whole organ is involved. The process may remain localized in one lung but usually both are involved. The apexes are rarely affected primarily. The lesions have been described as opacities which have a fluffy, cotton-like appearance.[2]

1. Williams, E. G.; Douglass, E. D.; Emmons, C. W., and Dunn, R. C.: Mycotic Endocarditis: Report of a Case, J. A. M. A. **119**: 333 (May 23) 1942. Ludlam and Henderson.[5]
2. Reeves, R. J.: The Incidence of Bronchomycosis in the South, Am. J. Roentgenol. **45**: 513 (April) 1941.
3. Flinn, J. W.; Flinn, R. S., and Flinn, Z. M.: A Study of 9 Cases of Bronchopulmonary Moniliasis, Ann. Int. Med. **9**: 42 (July) 1935.
4. Ikeda, K.: Bronchopulmonary Moniliasis, Arch. Path. **22**: 62 (July) 1936.
5. Ludlam, G. B., and Henderson, J. L.: Neonatal Thrush in Maternity Hospitals, Lancet **1**: 31 (Jan. 10) 1942. Woolley.[7]
6. Cited by Frank, T. J. F.: Bronchopulmonary, Moniliasis, Melbourne Hosp. Clin. Rep. **12**: 11, 1941.
7. Woolley, M. T.: Mycological Findings in Sputum, J. Lab. & Clin. Med. **23**: 553 (March) 1938.
8. Castellani, cited by Ikeda.[4]

TREATMENT

In treating a patient with bronchopulmonary moniliasis, measures must first be taken to improve the general health. Mild and moderate cases respond very well to potassium iodide, which seems to have a definite effect on the monilial infection. In severe cases, however, little benefit is derived from its use. The dose of potassium iodide has varied by different workers from 15 grains (1 Gm.) three times daily to 75 to 100 grains (5 to 6.5 Gm.) daily. Some have suggested sodium iodide 15 grains intravenously and potassium iodide 120 grains (7.8 Gm.) orally daily for two weeks.

Marrett [6] has used an autogenous vaccine of monilia with some benefit. Harve and Schmidt [6] reported satisfactory results from small doses of x-rays. One author [9] reported favorable results by using sulfapyridine.

REPORT OF CASE

History.—A white man aged 34 was admitted to the Station Hospital on July 17, 1941 with chief complaints of weakness, nausea, headache and pain over the left chest. The history revealed that his occupation prior to induction was cashier and hotel clerk. He had no tropical service. His habits were irrelevant except for moderate smoking. The family history revealed that his father died of an unknown cause at the age of 34. His mother died of diabetes mellitus at the age of 46. He had one sister who was living and well. His present illness began six weeks prior to admission to the hospital. Pain in the chest and nausea were noted to occur concomitantly. The chest pain was described as a dull pressure pain which was intermittent. Headaches were dated back several years before entry into the service and they were described as frontal in location and sharp in character and they varied in duration from a few hours to several days. He gave a history of a loss of 20 pounds (9 Kg.) in the previous eight months. He had a mild cough, which was nonproductive, but this was a rather recent addition to his complaints. He had no shortness of breath nor night sweats.

Physical Examination.—The temperature was 98 F., the pulse rate 80 per minute and the respiratory rate 18 per minute and blood pressure 140/100 mm. of mercury. The patient's general appearance was good, and he showed no evidence of any physical or mental distress. The head was normal. Pressure over the frontal and maxillary sinuses elicited some pain. The ears and throat were normal. The nasal mucosa showed a mild inflammation. The neck showed no adenopathy, rigidity nor adenitis. The lungs were normal in expansion. The right infraclavicular fossa was deeper than the left. Tactile fremitus was normal and equal on the two sides. The breath sounds were vesicular and normal except for some coarse sounds in the base of the right lung posteriorly. The heart gave no evidence of any enlargement and no thrills; the rate and rhythm were regular; no murmurs were audible in any body position. The abdomen was normal. No masses were palpable; no fluid nor distention was found. The liver was not enlarged. The spleen was not palpable. X-ray examination (fig. 1) July 18 showed slightly increased perivascular markings in both lower bronchial regions; otherwise the lung fields were clear. The heart was normal in size and configuration. There was partial calcification of the first costal cartilages.

The red blood cell count was 4,700,000, the white blood cell count 5,500, hemoglobin 100 per cent. The differential count revealed 4 per cent eosinophils, 2 per cent stabs, 56 per cent segmented forms, 33 per cent lymphocytes and 5 per cent monocytes. Urinalysis was normal. X-ray examination of the sinuses was normal. A diagnosis of sinusitis and bronchitis was made clinically. The patient was treated with ephedrine nose drops and application of hot packs to the bridge of the nose. The headaches subsided, the chest pain was relieved and the patient became symptom free. After an afebrile period of ten days and total hospitalization of twenty days he was discharged to duty on Aug. 6, 1941.

The patient was readmitted to the Station Hospital on Sept. 23, 1941. His complaints at this time were headache and pains across the chest. He had been well until the day prior to admission, when he began to feel "warm and feverish." He developed a headache and became dizzy. Soon afterward he developed the pains across his chest and a nonproductive cough.

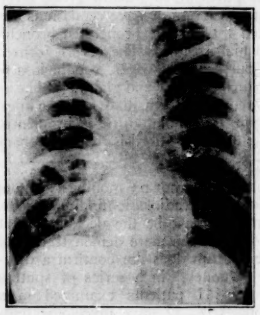

Fig. 1.—Perivascular markings in lower bronchial regions July 18.

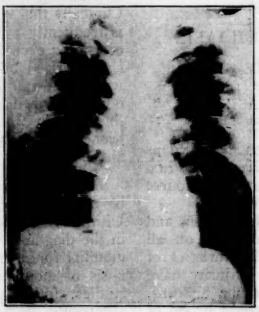

Fig. 2.—Irregular areas of infiltration scattered throughout both lung fields.

Fig. 3.—Extensive infiltration on 16th day.

Physical Examination.—The temperature was 103 F., the pulse rate 94 per minute and the respiratory rate 20 per minute. The blood pressure was 118/78. The skin was hot and moist. The throat was red and edematous. The nasal mucosa was injected. The neck showed no adenopathy, adenitis nor rigidity. The lungs revealed sonorous breath sounds in the upper portion of the left lung anteriorly and a few coarse rales in both bases. The breath sounds were increased in the left base. The heart was normal, with no enlargement, thrills nor murmurs. All other systems were normal.

Clinical Course.—The temperature ranged from 99 to 103 F. during the first three days of hospitalization. X-ray examination (fig. 2) of the chest (bedside) made on the 2d day of admission showed many small, generalized, soft, fluffy, cotton-like, irregular areas of infiltration, scattered throughout both lung fields, with the apexes relatively free. There was a mild hilar adenopathy. The findings were interpreted as consistent with diffuse bronchopneumonia. On the 3d day the respiratory rate increased to 24 per minute and examination of the lungs revealed crepitant rales in both bases. The patient was placed on sulfathiazole therapy. Blood study showed a white blood cell count of 11,950, a red cell count of 5,000,000, hemoglobin 90 per cent, with a differential count of 2 juvenile forms, 4 stabs,

9. Van Bree, R. S.: Moniliasis: Sulfapyridine Treatment, J. Michigan M. Soc. **40**: 197 (March) 1941.

81 segmented forms, 11 lymphocytes and 1 eosinophil. On the 6th day the patient developed a maculopapular rash, the cough became more productive, and coarse rales were noted in both bases. The blood count remained essentially the same. Urinalysis was normal. On the 14th day a review of the clinical chart showed that the temperature continued to range between 100 and 102 F. X-ray examination continued to show an increased amount of infiltration in the lungs interpreted as bronchopneumonia. The blood cultures were reported as negative. The leukocyte count was 8,700. The remainder of the blood study and urinalysis were normal. Seven sputum examinations up to this date were reported negative. On the 16th day progress chest plates (fig. 3) showed the process of infiltration to be more extensive, with coalescence of some of the areas of infiltration. There was no increase in the size of the hilar nodes, and the apexes remained practically clear. Since a patient with a miliary tuberculous lesion as extensive as was seen in this plate would be expected to appear much sicker, the findings were interpreted as being consistent with a generalized fungous infection. On this day the patient expectorated a copious amount of sputum, milky in appearance and possessing an odor similar to that of bread or yeast. Smears showed organisms of yeast resembling Monilia albicans. The patient showed no signs of toxicity. The sulfathiazole medication was discontinued and the patient was placed on a daily regimen of 10 cc. of sodium iodide (15 grains) given intravenously and 10 drops of a saturated solution of potassium iodide by mouth every four hours. On the 17th day sputum examination revealed the presence of organisms resembling Monilia albicans. On the 24th day a sputum culture showed yeast cells of Monilia albicans. From the 16th to the 31st day of the disease the patient's temperature never exceeded 101 F. On the 31st day he became nauseated and developed a brassy, metallic taste in his mouth. As a result the iodide was reduced in dosage. Further x-ray examination (fig. 4) made on the thirtieth day showed a regression of the pathologic process. The infiltrative lesions were smaller and more discrete, and there was a greater amount of aerated lung tissue. The lesions were beginning to be arranged in strands radiating from the hilar regions toward the periphery. A tuberculin test on the 35th day was negative. Repeated sputum examinations were negative for tubercle bacilli, repeated urinalyses were normal and repeated blood studies showed normal leukocyte, erythrocyte and differential counts. X-ray examination (fig. 5) made on the 43d day showed great improvement over the preceding films. The infiltrative process had almost cleared and was being replaced by fine strands of fibrosis. The hilar adenopathy had receded. On the 64th day the temperature became normal and remained so except for an occasional rise to 99 F. On the 89th day the patient was given a thirty day convalescent furlough. Reexamination on his return revealed a normal pulse, temperature and respiratory rate. Sputum examination was negative. The x-ray examination was negative except for a fibrotic reaction in both lungs. The patient was symptom free, had gained 12 pounds (5.4 Kg.) and was returned to duty. Reexamination (fig. 6) of the chest 175 days after he was discharged from the hospital showed a mild generalized fibrosis throughout both lung fields except for the apexes, which were clear. The man was subsequently transferred from this post, and no further examinations were possible.

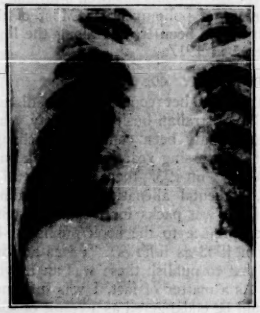

Fig. 4.—Regression of pathologic process on 30th day.

Fig. 5.—Improvement on 43d day.

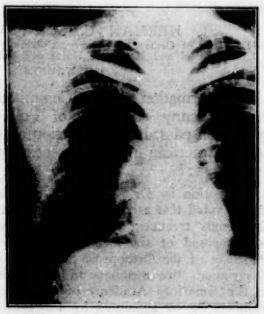

Fig. 6.—Mild generalized fibrosis 175 days after discharge from the hospital.

COMMENT

As mentioned in the clinical description, the diagnosis of bronchomoniliasis is often confused with bronchitis, bronchopneumonia, bronchiectasis and lung abscess and may often be difficult to differentiate from pulmonary tuberculosis, pneumonoconiosis or secondary carcinomatosis.

A diagnosis of bronchitis was initially made in this case on the clinical and radiologic findings. The diagnosis of bronchopneumonia was adhered to later, based on the infiltration of the lungs demonstrated radiographically, the physical findings and the clinical course. The suspicion of a mycotic infection was first aroused when the patient expectorated sputum which had a yeastlike odor. The diagnosis was confirmed by laboratory smears, cultures and animal inoculation.

SUMMARY

In a case of bronchopulmonary moniliasis the clinical course was in the beginning so mild that a diagnosis of bronchitis was made. Subsequent exacerbation of symptoms and signs, infiltration of the lungs and production of sputum resembling yeast in odor suggested a mycotic infection. The diagnosis was established by laboratory staining methods, cultures and animal inoculations, all of which isolated the fungus, Monilia albicans. Radiographically no diagnostic criteria for the diagnosis of bronchopulmonary moniliasis are known. Pulmonary mycoses are to be differentiated from acute pulmonary infections, silicosis, metastatic carcinoma and miliary tuberculosis. The differentiation of these conditions by means of the x-ray examination alone is impossible. Sodium iodide intravenously and potassium iodide by mouth were definitely effective in controlling the disease. The pathologic process in the lungs, as revealed by many films, varied closely with the clinical course. The response to iodides was almost immediately revealed in the x-ray plates. Subsequent x-ray examination 175 days later revealed no evidence of any pulmonary involvement.

EVALUATION OF THE KENNY TREATMENT OF INFANTILE PARALYSIS

REPORT OF COMMITTEE

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The formation of the Committee for Investigation of the Kenny Treatment of Poliomyelitis followed a resolution passed by the Section on Orthopedic Surgery of the American Medical Association on June 11, 1942, as follows: [1]

On motion by Dr. Rexford L. Diveley, Kansas City, Mo., it was voted that a committee be formed to study and evaluate the Kenny treatment of infantile paralysis, this committee to be composed of six members, two to be appointed by the chairman of the Orthopedic Section of the American Medical Association, two members to be appointed by the president of the American Academy of Orthopedic Surgeons and two members to be appointed by the president of the American Orthopedic Association, (1) this committee to study and evaluate the Kenny treatment of infantile paralysis, the report to be published either in THE JOURNAL OF THE AMERICAN ASSOCIATION or the *Journal of Bone and Joint Surgery*, and the respective members to report to their respective organizations as soon as it is practical and possible.

This committee, in the course of its study, visited a total of six cities and sixteen clinics, some of them being visited two or more times. A total of approximately 740 patients were examined, approximately 650 of whom had been treated by the method advocated by Miss Kenny. Some of these patients represented examples of cases from earlier epidemics, while the majority came from the epidemics occurring since 1940. Early in the investigation questionnaires were sent to over 900 orthopedic surgeons, but no definite conclusions could be drawn from the reports they submitted.

In the examination of these patients we have been cognizant of the fact that epidemics vary tremendously from year to year as to severity, type of paralysis and extent of paralysis. These observations are along the lines emphasized by Wickman [2] in 1907.

Read before the Section on Orthopedic Surgery at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

1. The Minutes of the Section on Orthopedic Surgery, J. A. M. A. **119**: 816 (July 4) 1942.
2. Wickman, I.: Beiträge zur Kenntnis der Heine-Medinschen Krankheit. Berlin, Kargle, 1907.

One of the things Miss Kenny has stressed in her writings, talks and newspaper articles is the difference of her treatment from what she calls "orthodox" treatment. It is rather difficult to understand what she means by "orthodox" treatment. In this country several different plans of treatment have been followed in the work with poliomyelitis. One might emphasize the fact that years ago Lovett [3] outlined a method of treatment which was followed successfully for many years and is still the basis of most of our modern therapy for poliomyelitis. We quote briefly from articles by Legg [4] and Lovett: [5]

Sensitiveness of the patient should be relieved as soon as possible in order to start muscle training. I have found that hot wet packs and hot baths given two or three times a day for fifteen minutes help best to shorten this stage. Dry heat may be applied, but it is my experience that moist heat is more effective.

Muscle training forms the basis for the modern treatment of poliomyelitis. In theory it consists of an attempt to make the patient send a voluntary impulse to contract a muscle.

Braces should not be used unnecessarily, but they should be used when needed; they are not in any way therapeutic but protective and conservative.

For many years the use of pools has been a prominent phase of the treatment of poliomyelitis. Most of the cases in this country have been treated along the lines advocated by Lovett [3] in 1917.

THE KENNY CONCEPT

Miss Kenny states that her concept of the disease was conceived in the Australian bush over thirty years ago. There has apparently been considerable change in this concept with the passing years. In a book published by Miss Kenny [6] in 1937 there is no mention of "muscle spasm," "mental alienation," "incoordination" or the use of hot wet packs for treatment. She explains this in her preface to the book published by Pohl and Kenny [7] in 1943 as follows: "I was advised by a medical man that to publish these was an unwise procedure. . . . As a matter of fact, I was informed that my liberty would be endangered as a result of such a statement."

During the course given at the University of Minnesota for this committee, Miss Kenny was asked why no mention was made of muscle spasm in her first book. She answered "Dr. Guinane wrote that book for me."

The Kenny concept has been described by Pohl [7] as follows:

This then is the real contribution of Miss Kenny, not a new treatment for the disease of infantile paralysis as it has been conceived in the past but a conception of the disease itself so radically opposed to the old as to almost warrant considering the entity as a new disease. The basic principles of the disease built upon the observations of the behavior of the musculature following an attack of the disease may be stated as follows:

1. The affected muscles are painful, hyperirritable and in spasm.

2. The flaccid muscles are normal. Loss of ability to contract these is due to functional dissociation (alienation) from the nervous system.

3. Lovett, R. W.: The Treatment of Infantile Paralysis, Philadelphia, Blakiston Son & Co., 1917.
4. Legg, A. T.: The Early Treatment of Poliomyelitis and the Importance of Physical Therapy, J. A. M. A. **107**: 633 (Aug. 29) 1936.
5. Lovett, R. W.: The Diagnosis, Prognosis and Early Treatment of Poliomyelitis, J. A. M. A. **78**: 1607 (May 27) 1922; The After-Care of Infantile Paralysis, ibid. **68**: 1018 (April 7) 1917.
6. Kenny, Elizabeth: Infantile Paralysis and Cerebral Diplegia, Sidney, Australia, Angus & Robertson, Limited, 1937.
7. Pohl, John F., and Kenny, Elizabeth: The Kenny Concept of Infantile Paralysis and Its Treatment, Minneapolis, Bruce Publishing Company, 1943.

3. Ability to voluntarily contract the nonfunctioning muscles returns only after releasing spasm in the opponents and carefully restoring the physiological continuity of the nerve conduction paths back to the muscles.

4. Paralysis due to nerve cell death occurs but is not a common condition. Most supposed weakness is due to untreated spasm and to disuse in the dissociated muscles.

5. Incoordination of muscle action appears in the untreated case.

6. Deformities do not occur. Those resulting from the old methods were due to untreated muscle spasm.

In short, Miss Kenny's discovery is that infantile paralysis is a disease in which a disturbance of physiologic function of the nervous system is of more importance than actual architectural change. Many of the observable clinical phenomena are the result of functional disorganization of the motor centers and of the nerve pathways to the muscles. The disease affects muscle as well as nerve tissue. Muscle spasm is the primary lesion in the disease rather than paralysis. Miss Kenny has designed a treatment for these conditions. Needless to say, the treatment could have nothing in common with the previous methods, designed for a disease of opposite conception.

The four major points in her concept of the disease have been stressed by Miss Kenny as follows:

1. *Muscle "Spasm."*—Pohl states that this is the primary lesion in the disease and it is claimed to be mainly reponsible for the crippling after-effects.[7] This committee believes that while this does exist in the early phases of the disease it usually disappears spontaneously. There may be residual "spasm" which can lead to deformity, but it is by no means the cause of the residual paralysis. While this has been emphasized by Miss Kenny it is not a new discovery, as stiffness, muscle tenderness and early contractures have been long recognized and considered an integral part of the acute phase of this disease.[8]

2. *Mental Alienation.*—Quoting Pohl again, "The flaccid muscles are normal. Loss of ability to contract these is due to functional dissociation (alienation) from the nervous system."[7]

The statement that the flaccid muscles are normal is obviously not true. There are instances in which a functional loss of use may result from pain, and in these instances function is restored as the pain subsides. Functional disuse may also result from stretch in any muscle opposed by muscles in varying degrees of contracture. Mental alienation has been covered in the past by the terms temporary paralysis, stretch paralysis and physiologic dissociation, and these would seem a more satisfactory scientific explanation than simple "functional dissociation from the nervous system." It is thus evident that this condition which they term "mental alienation" is not a new discovery, having been well described in 1911 by Robert Jones.[9]

3. *Incoordination.*—Pohl states: "Incoordination of muscle action appears in the untreated cases."[7] It is our impression that this is merely another term for the condition of muscle substitution or mass muscle action of an extremity, long recognized by orthopedic surgeons. As a matter of fact the term "muscle incoordination" was used by Wilbur[10] to describe this condition in poliomyelitis as early as 1912. This question is of academic interest and of relatively little importance.

4. *Paralysis* (denervation now preferred by Miss Kenny).—Pohl states: "Paralysis due to nerve cell death occurs but is not a common condition. Most supposed weakness is due to untreated spasm and to disuse in the dissociated muscles."[7]

It is our belief that if deformities are prevented the flaccid paralysis caused by destruction of nerve cells is the most important cause of crippling.

TREATMENT

In the latest textbook by Pohl and Kenny[7] we find the following:

While the main object of treatment in the acute stage is that of the relief of muscle spasm by means of the application of hot foments, yet the attempt to restore the physiological continuity of the nerve pathways back to the muscles must engage the attention at the earliest possible moment.

From our observations the Kenny treatment may be said to consist of the following:

1. Active treatment, including muscle reeducation, is begun as early as possible.

2. The patient is maintained in the normal standing position in bed.

3. "Spasm" and pain are treated by the use of hot foments. These are applied and reapplied continuously for about twelve hours per day according to a rigid technic. These are continued until "spasm" is relieved.

4. The extremities are carried through as wide a range of movement as can be tolerated several times each day.

5. Muscle reeducation is begun as early as possible. This is directed toward (*a*) "the restoration of mental awareness of muscles," (*b*) "restoration of coordination or combating of incoordination" and (*c*) "restoration of muscle function."

6. No splints or braces are tolerated.

7. The respirator should not be used on any patient.

8. Patients and their families are encouraged to believe that complete recovery will ensue or, in the event of residual paralysis, that the Kenny treatment was not instituted early enough or had been improperly administered.

9. All improvement is attributed to the treatment, and no spontaneous recovery or improvement is recognized.

10. Balneotherapy is an important adjunct to the foregoing procedures.

From personal observations of this committee during the past two years, each of these ten points can be analyzed and discussed as follows:

1. The institution of treatment directed toward the involved muscles as early as possible is desirable, but the general condition of the patient during the acute febrile stage may be such that the handling necessitated by the Kenny treatment can be detrimental. In other words, therapy during the acute febrile stage is primarily a medical problem.

2. Proper positioning in bed by one means or another has been a standard practice among physicians for over thirty years to our knowledge.[11] It is still a recommended procedure.

3. Heat in some form, including hot foments, has been used by physicians for many years to combat pain in

8. Peabody, F. W.; Draper, George, and Dochez, A. R.: A Clinical Study of Acute Poliomyelitis, Monograph 4, Rockefeller Institute for Medical Research, New York, 1912. Wilbur.[10]

9. Jones, Robert: Certain Operative Procedures in the Paralysis of Children, Brit. M. J., Dec. 9, 1911. Jones and Lovett.[13]

10. Wilbur, Ray Lyman: Early Diagnosis of Epidemic Poliomyelitis, California State J. Med. **10**: 418, 1912.

11. Lovett, R. W.: Principles of the Treatment of Infantile Paralysis, J. A. M. A. **62**: 251 (Jan. 24) 1914.

infantile paralysis. In most instances the pain can be relieved by the use of hot foments. We have seen a few cases, however, in which relief was not afforded by their use. It is the impression of this committee that pain is not an important feature of the disease in most instances and, when present, can be relieved also by other measures. Recovery from "spasm" in most instances takes place spontaneously. Hot packs may relieve this "spasm," but so will adequate rest. Therapy directed at pain and "spasm" should be discontinued as soon as these symptoms subside. We have seen instances in which hot packs seem to increase and prolong the "spasm." In some, "spasm" was relieved after the packs were discontinued. In others, "spasm" which had been relieved recurred when the packs were discontinued and was again relieved by their reapplication. The use of hot foments therefore cannot be considered as a panacea in this disease and their use must be guided by good medical judgment. The rigid technic insisted on by Miss Kenny in the application of these packs is neither important nor essential.

4. So long as active and passive movement of these extremities is carried out within the range of comfort, this point is acceptable. This procedure has been recommended by many physicians in the past, but again we stress the point that this movement should not be forced beyond the point of pain.

5. Jones and Lovett [12] described and used a method of muscle reeducation which in principle is similar to the method taught by Miss Kenny. This has served as the basis for orthopedic treatment for many years.

6. Cases have been seen under Kenny treatment in which early contractures were developing, and by application of plaster splints these contractures were controlled after their correction. This committee believes that splints are beneficial for some patients.

Braces should form an important part of the treatment during the later stages of this disease. We have seen Kenny treated patients walking with two English style crutches who could be so benefited by braces that the crutches could be discarded, thus liberating the hands for other use.

7. Respirators have saved many lives and should be used for patients with sufficient paralysis to embarrass respirations.

8. There is no evidence that the Kenny treatment prevents or decreases the amount of paralysis. We criticize severely the oft repeated statement of Miss Kenny to patients who have come to her after treatment elsewhere that had this case come to her early the disability would have been prevented. Such statements are not founded on facts.

9. Spontaneous recovery in poliomyelitis occurs in many cases. Reports in the medical literature indicate that this varies in different epidemics from 50 to 80 per cent. We have seen many patients receiving Kenny treatment who showed no muscle involvement at any time, yet she assumes the credit for their satisfactory results and does not take into account the factor of spontaneous recovery.

10. Pools and baths have long been used in the treatment of poliomyelitis.

12. Jones, Robert, and Lovett, R. W.: Orthopedic Surgery, ed 2, New York, William Wood & Co., 1929.

COMMENT

1. Miss Kenny's objection to muscle examinations and hence the lack of accurate records is to be condemned. If this should be followed by all clinics no reasonably accurate statistics would be available nor could the results from any type of treatment be determined. We do not feel that muscle examinations, if carefully and judiciously conducted, are of harm to the patient. We found no one in our visits to various clinics, other than Miss Kenny, who felt that careful muscle examinations were detrimental.

2. Miss Kenny has repeatedly stated that under "orthodox" treatment only 13 per cent of the patients recovered without paralysis,[13] while under her treatment over 80 per cent recover. We believe that this is a deliberate misrepresentation of the facts of treatment by other methods. This we attribute to her overzealous desire to promote further the adoption of the Kenny treatment. Miss Kenny's statement of 80 per cent recovery under her treatment has not been supported by accurate statistics in a significant number of cases. The figure on "orthodox" treatment is taken from an article which dealt entirely with severely paralyzed patients. Miss Kenny has been told repeatedly that this is not a fair comparison to make and that, if every case in an epidemic is included in the statistics, recovery of from 70 to 90 per cent can be expected from "orthodox" treatment.[14] Miss Kenny made this inaccurate comparison as late as May 1944.

3. Some of the people using the Kenny treatment believe that paralysis can be prevented when treatment is started early enough; that is, prior to the onset of paralysis. We have seen enough cases, however, in which the Kenny treatment was instituted very early to be convinced that this does not prevent or even minimize the degree of permanent paralysis.

4. In several cases seen by us the paralysis progressed after the Kenny treatment was instituted.

5. The amount of residual paralysis in any case is dependent on the amount of destruction in the central nervous system if deformities are prevented, and this varies tremendously in different epidemics.

6. There may be some local changes in isolated muscles during the acute stage the nature of which must be studied further. This change, if present, may be primary in the muscles themselves or may be secondary to changes in the central nervous system. As was emphasized by Lovett, contractures may develop early and, if not prevented or corrected during the early stages, may cause crippling and be resistant to treatment. It must be emphasized that the prevention of these contractures is the primary means by which medical care is able to minimize the effects of the disease.

7. In the opinion of the committee, after observation of 740 cases, particularly those during the epidemic of 1943, the continuous hot packs for all patients with minimal evidence of "spasm" is of questionable value and an unnecessary waste of manpower and hospital beds. Several clinics were using prone packs with good effect. The simplicity of their application requires much less manipulation of the patient. Once again we

13. McCarroll, H. R., and Crego, C. H.: An Evaluation of Physiotherapy in the Early Treatment of Poliomyelitis, J. Bone & Joint Surg. **23**: 851, 1941.

14. Harmon, P. H.: Poliomyelitis, Am. J. Dis. Child. **47**: 1179 (June) 1934. Sherman, Mary S.: The Natural Course of Poliomyelitis, J. A. M. A. **125**: 99 (May 13) 1944.

emphasize the fact that good medical judgment should be exercised in determining the cases in which hospital treatment should be instituted or continued.

8. Miss Kenny has laid claim recently to a new and revolutionary discovery by means of which she can diagnose the disease and determine the involved extremities prior to the onset of the usually recognized diagnostic clinical signs. She also claims that the institution of her treatment at this time will control the pain and prevent paralysis. She has stated that this is her greatest single contribution.

The preparalytic diagnosis of poliomyelitis has been described by Draper [15] and by Aycock and Luther.[16] There has been no satisfactory evidence presented to this committee that the institution of early local treatment will alter the course or the extent of the paralysis in any case.

9. Many of those who have used the Kenny method of treatment have repeatedly stated that all paralytic scoliosis can be prevented by this program of care. Among the patients studied by this committee from the last three epidemics, no severe scolioses and only a few slight curvatures of the spine have been noted. However, severe paralytic scoliosis occurs only in growing children and is uncommon within less than three years after the onset of the disease. Several more years must elapse before any final conclusions can be reached with regard to the amelioration or prevention of paralytic scoliosis by means of the Kenny treatment.

10. While the committee disapproves of and condemns the wide publicity which has misled the public and many members of the medical profession, it acknowledges that this has stimulated the medical profession to reevaluate known methods of treatment of this disease and to treat it more effectively.

11. During this investigation the committee has received the greatest courtesy and cooperation from the various clinics it has visited. We take this opportunity to express our sincere thanks to these people who have expended much time and effort in the presentation of their cases. We believe that these various clinics have made a sincere effort to carry out the treatment in the most effective way.

15. Draper, George: Significant Problems in Acute Anterior Poliomyelitis, J. A. M. A. **97:** 1139 (Oct. 17) 1931.
16. Aycock, W. L., and Luther, E. H.: Preparalytic Poliomyelitis, J. A. M. A. **91:** 387 (Aug. 11) 1928.

Influenza.—Nearly one death in ten, in the United States, is due to an acute infection of the lungs or air passages—influenza, pneumonia, "pleurisy" or bronchitis. One would have to wipe out the whole population of Albany or Chattanooga to duplicate the yearly loss officially debited to these diseases. Add tuberculosis (now far outdistanced by pneumonia) to the group and one has accounted for two thirds of all the deaths that can be clearly attributed to infectious causes. Americans, moreover, have some four hundred million colds a year. Great and small, the respiratory infections are indubitably unfinished business. These common ailments form a nosological jungle in which bacteria and viruses roam at will, despoiling the human race and defying both classification and control. Symptoms overlap, and no one knows how many different diseases lurk behind them. For some of them the doctor can do little. The epidemiologist who hacks his way into this mess courts frustration. The statistician has to content himself with omnibus calculations. The plain citizen talks glibly of grip or flu, gulps or sniffs his favorite panacea and, without any clear notion of what is happening to him, hopes for the best.—Smith, Geddes: Plague on Us, New York, Commonwealth Fund, 1941.

INHALATION THERAPY AT THE RHODE ISLAND HOSPITAL

A TEN YEAR PROGRESS NOTE

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AND
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PROVIDENCE, R. I.

The deleterious effects of hypoxia are too well known to physiologists, clinicians and flight surgeons to require emphasis, and the efficacy of the inhalation of air rich in oxygen to overcome hypoxia and prevent or correct its harmful action is equally well known. The use of oxygen therapy in the treatment of conditions in which hypoxia may be an important factor has become routine in clinical practice. A great deal has been written on the subject, and a number of efficient methods for the administration of gases have been developed and generally adopted. Two facts, however, in connection with the use of these methods are so important that they deserve to be emphasized repeatedly. They are that: (1) the application of an adequate method to the patient in need of oxygen is no proof that he is receiving oxygen sufficient for his needs and (2) the correct application of an adequate method with evidence that the patient is receiving oxygen sufficient for his needs is no guaranty that he will continue to do so as long as the method continues to be used. In other words oxygen must be applied with definite tests of the method in every instance, and continued checks of the efficacy of the treatment must be carried out at regular intervals throughout its application. No therapy can be more wasteful and useless than oxygen therapy not properly applied. Under such conditions not only do the patients suffer, but the confidence of the clinician in the value of the treatment is greatly undermined, to say nothing of the futile expenditure of funds.

Experience both in our own and in other hospitals has convinced us that there has been a great lack of proper interest in this field of therapeutics with a resultant failure to bring relief to many patients who could have been relieved, and a consequent distrust of this type of therapy on the part of the clinical staff. We believe that in many hospitals where poor technic in procedures such as transfusions and lumbar puncture would be unthinkable, oxygen therapy is so badly applied that the result, preventable damage and death, is as definitely due to bad technic as if it had resulted from the transfusion of incompatible blood or the infection of the spinal fluid. At the present time the problem in most hospitals is not that of the acquiring of apparatus and of understanding of its use but of maintenance and repair, careful application and constant testing and accurate recording of results. In our judgment the chief reason why the routine clinical use of oxygen is so often a failure in hospital practice is that there is no one on the clinical staff who is sufficiently interested in the work. This, we believe, justifies the description of the study and application of inhalation therapy at the Rhode Island Hospital during the past decade and the organization developed to insure its efficient use.

In 1932 oxygen therapy was well established as a method of relieving hypoxia in cardiac and pulmonary cases. Many hospitals, including our own, owned and operated one or more oxygen tents. These tents were

cumbersome and relatively inefficient. Testing of the oxygen content of the air in the tent was not properly carried out. The apparatus was frequently out of repair, often because of deterioration or tearing of the canopies of rubberized cloth, so that on the whole the method left a great deal to be desired. The nasal catheter was used with occasionally fairly good results, but the technic was not well understood. Face masks were employed for short periods under emergency conditions but were quite unsatisfactory for continued treatment. A fourth method, the use of the open cone, recommended by Dr. Albert H. Miller, by which oxygen was delivered into an open towel cone held firmly on a patient's face also gave good results at times, but it was open to the same objections that applied to mask technic.

In this last mentioned method, the use of the open cone, lay the principle on which the open box technic was developed and first described in 1932.[1] It involved replacing the cone by a box large enough to take in the

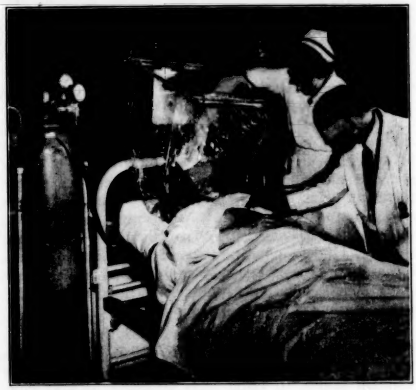


Fig. 1.—Apparatus suspended from bedside stand.

patient's head with the oxygen entering rapidly enough so that in spite of free diffusion upward a good concentration of oxygen could be maintained at the level of the patient's nose. It was found that a properly constructed ice container in the box would control both temperature and humidity. These boxes were first used in the treatment of children, and for small babies it was customary to construct the box so that the entire infant could be placed within it. The wooden boxes were later replaced by frames covered with rubberized cloth with windows of cellulose acetate, and still later clear transparent canopies of "pliofilm" or similar material were introduced. Although a few manufacturers began making the apparatus commercially, those used at the Rhode Island Hospital have practically all been made at a relatively low cost in the hospital shops (with the coolers made by a local tinsmith and the pliofilm canopies purchased in quantity and at a low cost from a dealer who has made several modifications at our suggestion). For the last five or six years the apparatus has been used suspended from a bedside stand which makes its application much easier for adults, especially for those who have to be kept in a sitting or somewhat raised position in bed (fig. 1). With this apparatus it has been found possible without difficulty to give adult patients 45 to 60 per cent oxygen in a satisfactory manner. While for adults the method has not by any means been the best for all conditions, it has been useful in a rather large percentage of the cases. For infants and children it has, in our hands, been always the method of choice. Like every other method of giving oxygen, it requires care in its application and repeated checks while in use.

Up to 1938, when the mask perfected by Drs. Boothby, Lovelace and Bulbulian [2] was introduced, oxygen therapy at the Rhode Island Hospital was carried on in almost all cases by two methods, oropharyngeal insufflation by nasal catheter (as described by Wineland and Waters [3]) and the open box. In adults the catheter was used for those whose oxygen need was not too great or who did not tolerate the box, while in children, as just noted, the box method was, and has remained, the only method employed. The B. L. B. mask was a distinct addition to our armamentarium. Later the O. E. M.[4] mask, devised by Dr. A. L. Barach, was adopted and has completely replaced the B. L. B. in our wards. Both masks are open to those obvious objections that must apply to all masks, namely, that sick and nervous patients at times will not tolerate them. We have found them particularly useful when it is desirable to give a high percentage of oxygen without delay. However, in attempting to use a 95 per cent concentration in order to remove nitrogen trapped in the distended intestine or tissue spaces as advocated by Fine and his associates [5] we have found it difficult to achieve the high concentration needed. A method of fitting a cover over the open box and using soda lime to absorb carbon dioxide has been described by one of us [6] and we have recently described an improvement in this closed box technic.[7]

As was previously emphasized, however, the possession of adequate apparatus and a knowledge of how to apply it is by no means the whole story in hospital practice. Careful upkeep, repair and replacement of apparatus is a necessity, as is a constant check on its efficiency while in use. While, on the whole, during the years between 1936 and 1941 results seemed to be fairly good, a careful study of the situation showed that there was much indeed to be desired. Great credit should go to the orderly personnel (Mr. J. M. Sears and later Mr. Arthur Battey), who not only kept all apparatus in good condition, with replacement of parts and the construction of new boxes of the hanging type, but also showed great efficiency and promptness in the application of the apparatus under emergency condi-

1. Burgess, A. M.; Briggs, A. S., and Burgess, A. M., Jr.: Oxygen Therapy by the Open Box Method, New England J. Med. **210:** 254, 1934.

2. Boothby, W. M.: Oxygen Administration: Value of High Concentration of Oxygen for Therapy, Proc. Staff Meet., Mayo Clin. **13:** 641-646, 1938. Lovelace, W. R., Jr.: Oxygen for Therapy and Aviation: Apparatus for Administration of Oxygen or Oxygen and Helium by Inhalation, ibid. **13:** 646-654, 1938. Bulbulian, A. H.: Design and Construction of Masks for Oxygen Inhalation Apparatus, ibid. **13:** 654-656, 1938.

3. Wineland, A. J., and Waters, R. M.: Oxygen Therapy: Insufflation into Oral Pharynx, Arch. Surg. **22:** 67-71 (Jan.) 1931.

4. Oxygen Equipment Manufacturing.

5. Fine, J.; Sears, J. B., and Banks, B. M.: Effect of Oxygen Inhalation on Gaseous Distention of Stomach and Small Intestine, Am. J. Digest. Dis. & Nutrition **2:** 361-367, 1935.

6. Burgess, A. M.: Oxygen Therapy: A Modification of the Box Method for Giving 95 per Cent Oxygen, New England J. Med. **210:** 467, 1937.

7. Saklad, M., and Burgess, A. M.: A New Apparatus for the Administration of 95 per Cent Oxygen, to be published.

tions. It proved, however, to be quite impossible for these men and their assistants to go about and make the repeated tests needed while oxygen was actually being given, tests which are necessary to make certain that the patient is getting what he is supposed to be receiving. An attempt to do this and to keep accurate records of treatment did not succeed. Under war conditions matters became much worse and it was decided that something must be done.

The solution of the problem appeared to depend on the organization of a definite department of inhalation therapy which would be at all times responsible for satisfactory oxygen administration. Such a department should (1) train and supervise the required personnel, (2) order equipment and keep it in repair, (3) supervise the actual application of oxygen and other gas therapy throughout the hospital and (4) keep records on appropriate forms and from such records compile and evaluate statistics.

The organization of this work was assigned to the anesthetist, and the department of inhalation therapy was made a division of the department of anesthesia. This was done because problems of inhalation therapy fall naturally within the scope of the anesthetist's work. His knowledge of normal and altered respiratory physiology is essential. Furthermore, he is familiar with the handling of gases under pressure and knows the problems and hazards peculiar to their care and storage. He is also acquainted with problems of apparatus, piping, reducing valves and other technical aspects of apparatus for administration. Furthermore, in the training of personnel in anesthesia the anesthetist has at his disposal individuals who are already specially prepared for the application of inhalation therapy, and this work is a normal and valuable addition to their training.

At the Rhode Island Hospital, nurses in the department of anesthesia act as supervisors of inhalation therapy throughout the hospital. It is their duty, when the request form for inhalation therapy is received, to supervise not only the application of the equipment to the patient but also its continued use. For this purpose the nurse inspects the apparatus at stated intervals and tests its efficiency and keeps a record of the case on a form provided for the purpose. The result of this careful supervision of apparatus in use has been not only a great improvement in efficiency and economy but also the creation of a real understanding and interest on the part of nurses, supervisors and medical personnel. Thus there is added to the duties of the members of the department of inhalation therapy a real teaching function. Thus far the results of this arrangement have been highly satisfactory.

The department of inhalation therapy has added certain methods to those already in use at the time of its organization. At the present time the following are in use:

1. Oropharyngeal insufflation.
2. Open box (or open top "tent").
3. Closed box (or closed top "tent").
4. Masks.
5. Positive pressure methods by (*a*) mask and (*b*) machine.
6. Carbon dioxide absorption methods by (*a*) mask and (*b*) machine.

The indications for inhalation therapy are fairly well understood and will not be discussed here. In the relief of hypoxia lies by far its greatest usefulness. This applies to atmospheric, alveolar, tidal and demand hypoxia.[8] In hypoxia of the stagnant, hemoglobic and histotoxic types the value of increasing the percentage of oxygen in the inspired atmosphere is questionable.

The use of nitrogen free atmosphere (95 to 100 per cent oxygen is the most easily obtainable) in the removal of nitrogen trapped in body spaces or dissolved in tissue fluids has already been referred to. A final judgment as to the value of the more easily respirable helium-oxygen mixtures in cases of partial respiratory obstructions, as in bronchial asthma, is still to be made. The same may be said of the application of oxygen under positive pressure. It is hoped that with the use of the equipment and methods to be described, more light may be thrown on these questions.

EQUIPMENT

For oropharyngeal insufflation we prefer the Emerson bottle. By this means satisfactory humidification is obtained, which is very desirable in this form of therapy.

For the open box technic the apparatus described and illustrated in figure 1 is in use. For closed box technic the same apparatus is employed, fitted with a pliofilm cover and soda lime container.

In the use of masks we prefer the O. E. M. to the B. L. B. The former has two main advantages: (1) because there is no opportunity for carbon dioxide accumulation or rebreathing and (2) because the injector valve principle has proved itself of great value in regulating the percentage of oxygen applied. It should be stated, however, that with the ordinary reducing valve a sufficiently great volume is not delivered from the tank to obtain the highest concentrations credited to this apparatus.

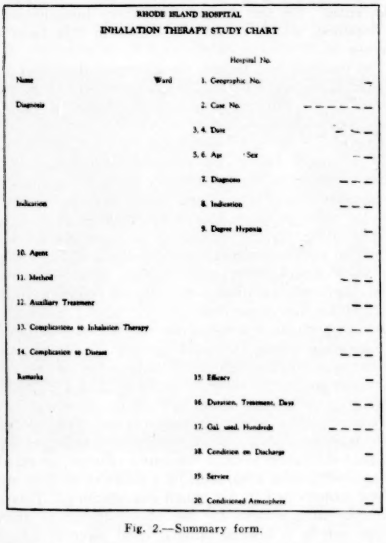
In using positive pressure we use one of two pieces of equipment (both O. E. M. products). In one the patient exhales through a choked orifice of various diameters and in the other he exhales against the resistance of a column of water, the height of which may be altered. We prefer the latter type, although we keep both available. It is our belief that positive pressure inhalation is most efficiently effected by exhaling against a valve controlled by a series of weights and is best exemplified in a Connell gas machine. This is primarily an apparatus for the administration of anesthetics, but it is also an almost ideal piece of equipment for a number of different methods of inhalation therapy.

Carbon dioxide absorption is especially valuable in dealing with helium-oxygen mixtures since it allows a great deal of rebreathing without carbon dioxide accumulation, thus keeping the cost of the gases down. We have employed a modern gas machine for the administration of helium-oxygen mixtures rather than special apparatus designed for this purpose for two reasons: (1) The gas machine seems to be as efficient as the special apparatus, and (2) we are not as yet certain of the role that helium-oxygen is to play in inhalation therapy. Carbon dioxide accumulation certainly is an undesirable phenomenon both in anesthesia and in inhalation therapy. To obviate this we have constructed a circuit absorption system for use in the closed box apparatus for the administration of 95 per cent oxygen.[7]

8. Saklad, M.; Saklad, E., and Sellman, P.: Inhalation Therapy, Rhode Island M. J. **26**: 65, 1943.

METHODS

The oropharyngeal administration of oxygen, because of its simplicity and in spite of its limitations, is the method to be employed in the absence of trained personnel. It may effectively relieve many of the hypoxic states amenable to inhalation therapy but is of greatest value when the hypoxia is relatively slight in degree. In institutions where there is available a capable and interested group to care for inhalation therapy the open box (or "open tent") proves extremely satisfactory. It is important that proper attention to details be maintained to get the most out of this apparatus. The neck band should be consantly watched to keep a proper fit. Frequent gas analyses should be made. This open top tent is of particular value in the treatment of infants and small children, in whom the neck band may be



RHODE ISLAND HOSPITAL
INHALATION THERAPY STUDY CHART

Hospital No.

Name — Ward — 1. Geographic No.
Diagnosis — 2. Case No.
3, 4. Date
5, 6. Age — Sex
7. Diagnosis
Indication — 8. Indication
9. Degree Hypoxia
10. Agent
11. Method
12. Auxiliary Treatment
13. Complications to Inhalation Therapy
14. Complications to Disease
Remarks — 15. Efficacy
16. Duration, Treatment, Days
17. Gal. used, Hundreds
18. Condition on Discharge
19. Service
20. Condemned Atmosphere

Fig. 2.—Summary form.

fitted about the abdomen. The use of this apparatus is less tiring to the patient than is the nasal catheter. For patients suffering from claustrophobia, tents of any kind are unsatisfactory. The closed top box, because such high oxygen values can be reached, is indicated in that type of therapy in which nitrogen decompression, as aforementioned, is desired.

The use of masks is of value for patients who can tolerate the tight fit that is necessary. A mask is of very little value to a noncooperative patient. The mask is of particular value when the therapy will be of short duration.

Positive pressure therapy is best accomplished through a mask. As previously mentioned, we employ a modern gas machine to accomplish this. To determine constantly the presence of positive pressure, one should note the passage of exhalations bubbling through the water when employing the water type positive pressure method of O. E. M. In employing a gas machine there should be a definite easily audible passage of gas through the relief valve with every exhalation. If either of these signs on expiration is absent, the fault lies with either too great a resistance to exhalation, an inadequate flow of gases or leakage. In the great majority of cases the fault will be leakage. It is very difficult to maintain an adequately airtight system for long periods.

RECORDS

Three requirements must be satisfied by the filling of forms:

1. To satisfy bookkeeping requirements. A form should be signed by the physician stating his request. The nurse technician keeps a daily record on the cases she has cared for through the day and passes this sheet into the bookkeeping office daily for billing purposes.

2. A record of the therapy. On this are recorded the type of therapy, the time instituted, oxygen percentages, the course of the therapy and any other remarks which may be of importance. This form acquaints the physician in charge with the efficiency of the treatment during his absence from the bedside and serves as a basis for any alteration in the method used.

3. Statistical requirements. The true value of inhalation therapy is not appreciated. To evaluate this method of therapy properly, certain statistical requirements should be met. The Committee of Records of the American Society of Anaesthetists, of which one of us (M. S.) is chairman, has recently developed a statistical plan for inhalation therapy. The Hollerith method is used. In this method the variables are assigned code numbers. These code numbers are transferred to cards as punch holes. The cards are then sorted by machine. For our purpose a summary form (fig. 2) is filled out by the nurse in consultation with the head of the department. The variables are written in in words and their code numbers in the area designated for them. When sufficient of these forms are accumulated, punch cards may be then made out and analysis begun. The details of this method are to be presented before the February meeting of the American Society of Anaesthetists and will then be published.

SUMMARY

As a result of the development and application of inhalation therapy at the Rhode Island Hospital during the last ten years, together with the organization which has been evolved and the methods which have been adopted, the most important fact that has been borne in on us and the one which, in our judgment, determines the difference between success and failure is the fact that no degree of knowledge of method, no profusion of excellent equipment is half as important as the day by day conscientious supervision of apparatus when actually in use, to see that it functions efficiently. The difficulties that have been encountered in the experience of many hospitals, including our own, in the accomplishment of efficient and effective treatment in this important field, and the degree to which we believe, by the organization and methods described, these difficulties have been overcome have led us to hope that our presentation may be of value to others desirous of attaining the same ends.

454 Angell Street.

AN EPIDEMIC OF INFLUENZA A IN INFANTS AND CHILDREN

A CLINICAL AND LABORATORY INVESTIGATION

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AND
E. R. RICKARD, M.D.
MINNEAPOLIS

Acute upper respiratory infections, together with their complications and sequelae, vary amazingly in symptomatology, localization and severity from the common cold at one end of the series through an endless maze of possibilities to a fatal septicemia at the other end. There is no sharp line of cleavage as to classification, pathology or determinable etiology, according to Brennemann.[1] Recent progress, however, in the field of research on upper respiratory diseases has revealed two filtrable viruses, influenza A and B,[2] both of which may be isolated and identified. Either of these viruses may be the etiologic agent responsible for a portion of these illnesses. Moreover, reliable serologic tests have been perfected for the diagnosis of infection by these viruses.[3]

It has been possible to diagnose a recent epidemic of influenza among infants and children in the University of Minnesota Hospitals by isolating influenza A virus directly from unfiltered throat washings inoculated intra-allantoically in the developing chick embryo.[4] Further confirmation of the diagnosis was accomplished by demonstrating a significant increase in specific neutralizing antibodies in the patients' serums as measured by the hemagglutinin inhibition test.[5]

A review of the literature since the discovery of influenza A virus in 1933 has revealed only one study in which an agent capable of infecting ferrets was recovered from nasopharyngeal washings of infants. This report, by Brightman and Trask,[6] was primarily an epidemiologic and clinical observation of cases occurring during the influenza epidemic of 1934-1935. Brightman,[7] in a second paper of the series, reported that ferrets recovering from the experimental disease were immune to reinoculation with a known strain of influenza A virus and that their serums, as well as those of patients convalescent from influenza, were capable of neutralizing the virus. The present report, based on data obtained by use of the newer technics in virus isolation and serologic tests which have been developed during the intervening decade, largely confirms the original observations of Brightman and Trask.

From the Department of Pediatrics, University of Minnesota Medical School, and the Influenza Laboratory, Division of Preventable Diseases, Minnesota Department of Health. The Influenza Laboratory is supported largely by funds from the International Health Division of the Rockefeller Foundation.

1. Brennemann, J.: Practice of Pediatrics, Hagerstown, Md., W. F. Prior Company, Inc., 1942, vol. 2, chapter 39.
2. Smith, W.; Andrewes, C. H., and Laidlaw, P. P.: Virus Obtained from Influenza Patients, Lancet **2**: 66, 1933. Horsfall, F. L., Jr.; Lennette, E. H.; Rickard, E. R.; Andrewes, C. H.; Smith, W., and Stuart-Harris, C. H.: The Nomenclature of Influenza, ibid. **2**: 413, 1940. Francis.[10]
3. Laidlaw, P. P.; Smith, W.; Andrewes, C. H., and Dunkin, G. W.: Influenza: The Preparation of Immune Sera in Horses, Brit. J. Exper. Path. **16**: 275, 1935. Fairbrother, R. W., and Hoyle, L.: Observations on the Aetiology of Influenza, J. Path. & Bact. **44**: 213, 1937. Hirst.[8]
4. Rickard, E. R.; Thigpen, M. P., and Crowley, J. H.: The Isolation of Influenza Virus by the Intra-Allantoic Inoculation of Chick Embryos with Untreated Throat Washings, J. Immunol., to be published.
5. Hirst, G. K.: The Quantitative Determination of Influenza Virus and Antibodies by Means of Red Cell Agglutination, J. Exper. Med. **75**: 49, 1942.
6. Brightman, I. J., and Trask, J. D.: Recovery of a Filtrable Virus from Children with Influenza: I. Epidemiologic and Clinical Observations, Am. J. Dis. Child. **52**: 67 (July) 1936.
7. Brightman, I. J.: Recovery of Filtrable Virus from Children with Influenza: II. Experimental Disease in Ferrets, Am. J. Dis. Child. **52**: 78 (July) 1936.

EPIDEMIOLOGY

The last known outbreak of influenza A occurred in Minneapolis in the winter of 1940-1941.[8] In consideration of the rather explosive character of outbreaks of this disease[9] there would be little probability that the disease had occurred in an unrecognized form until it again became epidemic among certain groups of the adult population in this city shortly after the middle of November 1943.

The first case was recognized in the pediatric wards of the University Hospitals on November 25. This indicates an interim of approximately three years between epidemics, which is of special interest in connection with the present study because we can be reasonably sure that infants under 3 years of age are having their first experience with the disease. Although previous studies have indicated that infants possess relatively low neutralizing antibody titers[10] and have shown that neutralizing antibodies are transmitted from mother to infant and are subsequently lost by the infant,[11] we know of no reports on the study of quantitative antibody response of infants who have recently experienced their first infection with influenza virus.

A special effort was made, therefore, to study infants under 3 years of age. However, all children 10 years of age or below were included in the series. With few exceptions, throat washings for virus identification were

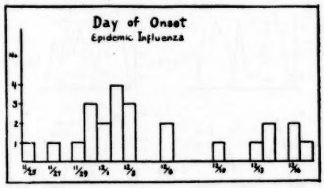

Chart 1.—Days of onset of the 24 cases in the epidemic.

taken and specimens of serums for antibody determinations were obtained early in illness and again at two to three week intervals after the onset of the disease. Throat cultures and blood counts were done routinely.

The epidemic lasted from November 25 to December 17. The number of cases according to the day of onset is given in chart 1. The average census of children under 10 years of age in the pediatric service during the epidemic interval was 100. As a total of 24 clinical cases were observed, the attack rate was approximately 24 per cent.

CLINICAL OBSERVATIONS

The onset of the disease was sudden in nearly all cases. An unusual opportunity was presented to observe this, as nearly all the patients were already in the hospital and under care for other conditions at the time of onset of their influenza.

A biphasic or irregular fever curve was noted in two thirds of the cases, and only the milder cases

8. Influenza Laboratory, Minnesota Department of Health, Minneapolis; unpublished reports.
9. Stuart-Harris, C. H.; Andrewes, C. H.; Smith, W.; Chalmers, D. K. M.; Cowen, E. G. H., and Hughes, D. L.: A Study of Epidemic Influenza, with Special Reference to the 1936-1937 Epidemic, Medical Research Council, Special Report Series, No. 228, London, His Majesty's Stationery Office, 1938, p. 31. Horsfall, F. L., Jr.; Hahn, R. C., and Rickard, E. R.: Four Recent Influenza Epidemics: An Experimental Study, J. Clin. Investigation **19**: 379, 1940.
10. Francis, T., Jr., and Magill, T. P.: The Incidence of Neutralizing Antibodies for Human Influenza Virus in the Serum of Human Individuals of Different Ages, J. Exper. Med. **63**: 655, 1936.
11. Rickard, E. R., and Horsfall, F. L., Jr.: The Relationship of Neutralizing Antibodies Against Influenza A Virus in the Sera of Mothers and Infants, J. Immunol. **42**: 267, 1941.

appeared to show the usual "three day fever" which is considered characteristic of the disease among patients without complications. In general, the clinical course and severity of symptoms was the same in the infants and younger children as in the older children. Attention is directed to the temperature curves of 12 patients, selected to show the various types of febrile response at different ages, as illustrated in chart 2. Biphasic curves were observed at all ages in this study of infants and children. This feature was noted only rarely in a study of an epidemic of influenza among young adults which was carried on at the same time and which was caused by the same type of virus.[8] Brightman and Trask [6] refer to the "familiar syndrome

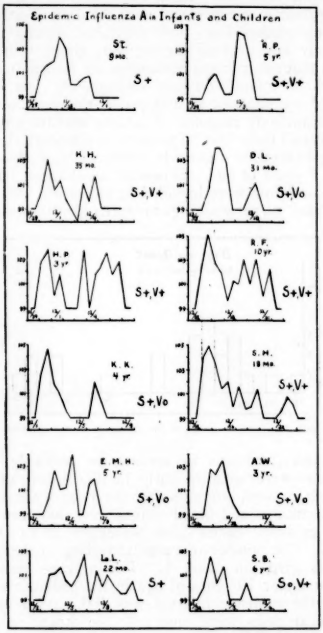

Chart 2.—Temperature curves of 12 patients with influenza, showing the various types of response. Temperatures were all taken rectally. S+, positive serologic findings; SO, negative serologic findings; V+, positive virus isolation; VO, negative virus isolation.

of high, irregular or biphasic fever, lassitude and prostration. . . ." They state that leukopenia by no means separates influenza from other diseases involving the respiratory system. The white blood cell counts in our cases rarely showed leukopenia early, with the exception of 1 case. The average of the early counts was 9,047 cells per cubic millimeter, and the counts later, usually after defervescence, gave an average of 7,887 cells. We were not able to confirm the current opinion that leukopenia is a characteristic of influenza.

The infants and children had few subjective complaints. Some of the older children complained of sore throat and headache. Lassitude was rather striking in both groups, while restlessness predominated with the infants. Flushing, cough, mild conjunctival injection and acute pharyngitis were the main physical findings. One patient had a severe epistaxis, and swabbing of the throat initiated some mild bleeding in a few patients. The hyperemia of the pharyngeal spaces stood out as a cardinal finding. This was accompanied by mild laryngeal symptoms and cough in some of the younger patients, not unlike the characteristic brassy cough associated with measles.

The complications were surprisingly mild in spite of the fact that the throat cultures revealed hemolytic streptococci in 7 children. There were 6 patients from whom nonhemolytic streptococci were isolated in the throat culture. Two patients developed otitis media. None of the patients developed pneumonia, although S. H., aged 18 months, on Dec. 15, 1943 showed a moderate increase in bronchovascular markings in a roentgenogram of the lungs, interpreted as acute bronchitis. Diarrhea was not observed.

LABORATORY FINDINGS

Serum specimens were examined for neutralizing antibodies to influenza A and B viruses by the red blood cell agglutination inhibition test.[5] Serial twofold dilutions of serum in isotonic solution of sodium chloride were mixed with four minimal agglutinating doses of influenza virus in 0.5 cc. amounts of the virus dilution in isotonic solution of sodium chloride. To the serum-virus mixtures were added 1 cc. amounts of a 1.5 per cent suspension of adult chicken red blood cells in isotonic solution of sodium chloride. At the end of seventy-five minutes the end points of the serum titrations were determined by use of the photodensitometer.[12] The end point of the titration was taken as the serum dilution in which 50 per cent of the cells had sedimented. In case this did not occur in any given serum dilution, the end point was determined by interpolation of the dilution above and the dilution below 50 per cent red cell sedimentation. In all instances the acute and convalescent phase serums from the same patient were examined in the same test.

The serums were tested against the PR8 strain [13] of influenza A virus which had undergone 250 passages in mice followed by 30 intra-allantoic passages in chick embryos and against the Lee [14] strain of influenza B virus, which had been received from the International Health Division Laboratories and had undergone six subsequent intra-allantoic passages in chick embryos. The red blood cell agglutination titer of each virus was determined previous to the use of the virus in the test. One cc. quantities of serial twofold dilutions of the virus were mixed with equal quantities of a 1.5 per cent chicken red blood cell suspension in isotonic solution of sodium chloride. The end points of the virus titrations were determined in the same manner as the serum titrations.

Throat washings were obtained from 19 of the 24 patients at the time at which acute phase serum specimens were taken. All washings were obtained during the febrile course of the disease, and the majority were taken within twenty-four hours of onset of illness. A small amount of isotonic solution of sodium chloride was instilled into the patient's nostrils and was recovered together with mucus from the nasopharynx by means of a soft rubber ear syringe. The washings were placed in unbreakable lusteroid tubes, were frozen on solidified

12. Hirst, G. K., and Pickels, D. G.: A Method for the Titration of Influenza Hemagglutinins and Influenza Antibodies with the Aid of the Photoelectric Densitometer, J. Immunol. **45**: 273, 1940.
13. Francis, T., Jr.: Transmission of Influenza by a Filtrable Virus, Science **80**: 457, 1934.
14. Francis, T., Jr.: A New Type of Virus from Epidemic Influenza, Science **92**: 405, 1940.

carbon dioxide without delay and were so kept until examined.

Each washing was inoculated in the unfiltered state intra-allantoically into six eleven day chick embryos according to the technic described in another publication.[4] After forty-eight hours' incubation at 37 C. the allantoic fluids of living embryos were tested for agglutination of chicken red blood cells. If such agglutination was not observed, the fluids were pooled and subsequent passage made to six other eleven day embryos, which were incubated and tested in an identical manner. A minimum of five serial passages was performed with all throat washings examined before considering them negative.

When agglutination was observed, the positive allantoic fluids were pooled and the agglutinating titer of the pool was determined in the manner previously described. If this titer was of low order, an additional passage was made in chick embryos, which passage always produced a fluid containing sufficient agglutinating antigen to permit the identification of the virus type.

Unknown viruses were identified as influenza A by determining the titers of the following two serum pools against the unknown strains:

Serum 1. A pool of serums taken from several human subjects during the acute phase of influenza A. The titer of this serum against the PR8 strain of influenza A virus was 1:256 and against the Lee strain of influenza B virus 1:128.

Serum 2. A pool of convalescent phase serums taken from the same patients as serum 1 at approximately two or three weeks after onset of illness. The titer of serum 2 against the PR8 influenza A virus was 1:3,010, against the Lee influenza B virus 1:128.

When tested against an unknown virus, an increase in titer of serum 2 of more than four times over serum 1 was taken to indicate that the unknown virus was influenza A.

In the accompanying table are given details concerning antibodies to influenza A in the serums examined and details concerning isolation and identification of virus strains. All pairs of serums examined for antibodies against influenza A were also examined for antibodies against influenza B. In no instance was any significant increase in titer noted against the latter virus. This agent was therefore considered to be excluded as the cause of illness of any of the patients.

It may be observed that of 23 pairs of serum specimens examined, 18, or 78 per cent, of the specimens showed fourfold or greater increases in antibodies to influenza A virus in the convalescent phase serums. In 19 throat washings examined for the presence of virus, 7, or 37 per cent, yielded a virus which was identified as influenza A by neutralization with the aforementioned known human antiserums. These percentages were very similar to those obtained for positive serologic diagnoses and virus isolation among a much larger series of specimens taken from the adult population during the same epidemic.[8]

In the serum of S. B., from whose throat influenza virus A was isolated and identified, no increase in antibodies was noted. Rather there appeared a drop in titer, which was verified by repeating the examination of this patient's serum several times and by determining the titer of a second convalescent serum specimen. Isolated instances of virus isolation without serologic response have been previously reported.[15] The apparent drop in titer observed in this patient's serum cannot be explained at present.

Serologic Response and Virus Isolation and Identification Among Infants and Children Ill with Clinical Influenza

		Serologic Response Influenza A				Virus Isolation and Identification			
						Egg Passage in Which Agglutination Was First Observed	Titers with Human Serum Pools		
Patient	Age	Titers Acute Phase Serums	Titers Convalescent Phase Serums	Times Increase Convalescent Over Acute Titer	Serologic Diagnosis Influenza A		Acute Phase Influenza A	Convalescent Phase Influenza A	Identification Influenza A
J. R.	1 mo.	1:20	1:11	0	—	Negative			
G.	5 mos.	1:16	1:16	0	—	Negative			
S.	9 mos.	1:52	1:588	11	+				
M. S.	10 mos.	1:10	1:8	0	—	Negative			
K. S.	12 mos.	1:26	1:1,270	49	+				
D. L.	31 mos.	1:60	1:4,096	68	+	Negative			
S. H.	18 mos.	1:49	1:2,048	41	+	First	1:208	1:3,010	+
L. L.	22 mos.	1:79	1:676	9	+				
F.	22 mos.	<1:32	1:3,330	>100	+	Negative			
I. V.	33 mos.	....	....	..	..	Negative			
K. H.	35 mos.	1:84	1:1,270	15	+	Third	1:23	1:885	+
K. K.	3 yrs.	1:128	1:779	6	+	Negative			
R. K.	3 yrs.	1:64	1:338	5	+				
H. P.	3 yrs.	1:120	1:1,450	12	+	Fourth	1:60	1:512	+
A. W.	3 yrs.	1:74	1:2,048	28	+	Negative			
M. J.	4 yrs.	1:128	1:1,270	10	+	Second	1:315	1:3,820	+
R. P.	5 yrs.	1:294	1:1,175	4	+	Third	1:256	1:1,910	+
E. H.	5 yrs.	1:194	1:6,220	32	+	Negative			
S. B.	6 yrs.	1:417	1:112	0	—	Third	1:32	1:722	+
J. E.	7 yrs.	1:722	1:179	0	—	Negative			
A. H.	7 yrs.	1:223	1:26,600	120	+	Negative			
G. M.	8 yrs.	1:32	1:958	30	+				
R. A.	9 yrs.	1:45	1:6,700	150	+	Negative			
R. F.	10 yrs.	1:45	1:1,560	35	+	Sixth	1:128	1:2,048	+

Among infants of less than 23 months of age, who to the best of our knowledge had had no previous infection with influenza A virus, the preinfection antibody titers were appreciably lower than in the group from 35 months to 10 years of age. All the members of the latter group had presumably had opportunity to be infected with this virus. Including only individuals with positive serologic diagnosis, the average preinfection titer of the first group was 1:50 and that of the second was 1:119. In this respect it should be noted that the hemagglutinin-inhibition test may not be capable of determining very low neutralizing antibody titers in certain serums. In low dilutions, serums containing no specific antibodies whatever may cause inhibition of agglutination. This nonspecific effect generally disappears in serum dilutions over 1:64.[5]

The average postinfection antibody levels of the two groups were 1:2,000 and 1:4,189, which indicated that the older children had produced only slightly greater

15. Francis, T., Jr.; Magill, T. P.; Rickard, E. R., and Beck, M. D.: Etiological Studies of Epidemic Influenza, Am. J. Pub. Health **27**: 1141, 1937.

antibody titers than the younger. The average incremental antibody rise of the titers of convalescent serums of the two groups were forty and thirty-five times the average preinfection titers in the younger and older groups respectively. Were it possible to eliminate the factor of nonspecific inhibition in the preinfection serums of the first group, it would seem likely that the incremental rise of this group would have been far greater. Previous studies in which neutralization tests were done in mice [11] have shown that the serums of children of this age, who have had no infection with influenza virus, possess almost no demonstrable neutralizing antibodies.

COMMENT

By the use of recently developed laboratory technics, it has been possible to diagnose an epidemic of influenza A in a group of infants and children. The antibody response in infants who were, in all probability, having their first experience with the disease has been studied. Although previous investigators have successfully infected ferrets with influenza by inoculation of throat washings taken from infants ill with influenza,[8] neutralizing antibodies were not demonstrated in the convalescent serums of the patients from whom the washings were obtained.[7] In the pediatric literature, several references to the inability of infants to develop neutralizing antibody titers are recorded. The observations recorded here show that, following infection with influenza A virus, infants develop antibody responses of approximately the same magnitude as do older children.

Throughout the epidemic, all cases suspected of being influenza on clinical evidence alone were included in the series studied. Four of the patients showed no antibody response, nor was virus isolated from these patients' throats. Symptoms and findings in these cases did not differ appreciably from those of the cases in which positive serologic diagnosis or virus isolation was obtained. Previous investigators have observed in the study of epidemics of influenza A among adults that persons ill during an epidemic do not all present positive serologic findings, nor may virus be isolated from the patient's throat washing in every instance.[16]

By means of throat washings which were inoculated in the unfiltered state intra-allantoically into eleven day chick embryos, the early identification of the virus was made possible. In 1 instance in this epidemic the virus was isolated in the first passage forty-eight hours after the washing was inoculated. Rickard, Thigpen and Crowley [4] found that throat washings need not be filtered to permit direct embryonated egg inoculation and that the simple intra-allantoic route of inoculation serves as well as the intraembryonic.

Clinically this study confirms the observations of Brightman and Trask [6] that infants and young children with influenza have high, irregular or biphasic fevers. These were the predominant types of temperature curves recorded in these patients and seem significant in contrast to febrile curves recorded on young adults in the same epidemic.[17] The outstanding response in the latter group was a fever rising abruptly and falling rather rapidly, generally in two to four days.

Aldrich [18] calls attention to the association of grip and laryngitis, which in his study ran a close parallel, "making it seem possible that croup is a manifestation of grip in infancy." It would seem probable that other infectious agents responsible for certain upper respiratory diseases of undetermined etiology, which in practice are commonly designated as grip, may be the cause of laryngitis or croup in infants. In the present study, however, influenza A virus was not found to cause such symptoms.

16. Rickard, E. R.; Lennette, E. H., and Horsfall, F. L., Jr.: A Comprehensive Study of Influenza in a Rural Community, Pub. Health Rep. **55**: 2146, 1940. Stuart-Harris and others.[9] Horsfall, Hahn and Rickard.[9] Francis, Magill, Rickard and Beck.[15]

17. Boynton, R.: Personal communication to the authors.

18. Aldrich, C. A.: Clinical Observations on Grip as Seen in Pediatric Practice, J. Pediat. **11**: 331, 1937.

SUMMARY

In the study of an epidemic of influenza occurring in infants and children, the disease was characterized by irregular or biphasic fever curves. Leukopenia was not found to be present. Acute pharyngitis, often hyperemic, and lassitude were the most prominent physical findings. None of the patients manifested severe laryngitis or croup.

Influenza A virus was isolated from throat washings taken from a number of the patients and inoculated intra-allantoically into developing chick embryos. The serologic diagnosis of the epidemic was established by the demonstration of significant increases in neutralizing antibodies by means of the hemagglutinin inhibition test in the serums of 18 out of 23 patients so examined. The neutralizing antibody response of infants, who in all probability were having their first infection with influenza A virus, was found to be of approximately the same magnitude as that of older children.

"CONGENITAL" MUSCULAR TORTICOLLIS

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Although "congenital" muscular torticollis is encountered frequently by pediatricians and orthopedic surgeons, there is no uniformity of thought as to its etiology or therapy. There is much confusion as to diagnosis. The numerous factors which may contribute to the development of a torticollis (wry neck) deformity are found in the accompanying classification.

Congenital muscular torticollis is a distinct entity, the primary pathologic picture being limited to the sternocleidomastoid muscle. Associated deformities of the face, head, ear and cervical spine are secondary in character, resulting from an abnormal position of the head both prior and subsequent to birth.

Muscular torticollis may be present at birth or may manifest itself first on about the tenth to the fourteenth day, at which time the appearance of a hard, immobile, fusiform swelling (fig. 1) is noticed in the sternocleidomastoid muscle. The delivery is usually difficult or abnormal, most often breech. The swelling or "tumor," as it is commonly called, usually increases in size for two to four weeks until it reaches the size of a very large almond. It then begins to regress and may disappear completely in from five to eight months. The muscle at this time feels short and fibrous, and is noncontractile. The torticollis becomes increasingly severe, and the head is tilted toward the affected side and the face toward the opposite side (fig. 2). This position may disappear only to reappear later at a period of rapid growth. As a result of the head being held more or less constantly to one side, and the imbalance of forces and muscle pull exerted on the head, the skull becomes foreshortened in the oblique fronto-

occipital diameter. The level of the eyes changes, the mastoid process becomes more prominent and the clavicle and shoulder become elevated on the affected side. A lower cervical, upper dorsal scoliosis may develop with concavity toward the involved side. The deformities may be present at birth or soon after or may seem to develop at a later date if the torticollis persists.

PATHOLOGY

Gross.—The "tumor" of the sternocleidomastoid muscle in muscular torticollis is not a tumor in the sternocleidomastoid muscle but usually is a fusiform swelling of the entire muscle comprising both the sternal and clavicular heads (fig. 3). The size of the "tumor" varies from 2 to 6 cm. in length and from 1 to 1.5 cm. in width. It feels firm, fibrous and at times cartilaginous. On section it appears white and glistening. If tissue is taken from the sternocleidomastoid muscle in an older child after the disappearance of the tumor, the muscle will be found to be replaced by a dense, fibrous, tendinous band.

TABLE 1.—*Classification of Torticollis*

1. Structural
   a. *Osseous*
      - Hemivertebrae
      - Congenital fusion of cervical vertebrae
      - Klippel-Feil syndrome
      - Malformation of skull and vertebral processes
      - Cervical rib
      - Pterygium colli
      - Compensatory to structural defects of dorsal and lumbar spine
   b. *Myogenic*
      - Congenital absence of cervical muscles
      - Congenital hypertrophy
2. Paralytic
   - Anterior poliomyelitis
   - Spastic paralysis
   - Postinfections (neuritis)
   - Post-traumatic
   - Other nerve lesions
   - Erb's
   - Spasmodic
3. Vascular
   - Congenital
   - Anterior scalenus syndrome
4. *Infections*
   - Cervical adenitis
   - Retropharyngeal abscess
   - Mastoiditis
   - Infections of cervical vertebrae
   - Infections of occiput
   - Arthritis and synovitis
   - Cutaneous infection
   - Infections of congenital cysts and diverticula
   - Spontaneous dislocation of cervical vertebra
   - Fascitis
   - Retrotonsillar abscess
   - Otitis media
   - Myositis
   - Cervical abscess
   - Spondylitis
   - Meningitis
5. *Traumatic*
   - Fractures and dislocations of cervical spine
   - Fractures of cranial base
   - Trauma of cervical fascia, muscles, nerves, etc.
   - Fracture of clavicle and scapula
6. *Functional*
   - Hysterical
   - Spasmodic torticollis?
7. *Ocular*
   - Visual defects, corneal scars, etc.
   - Muscular
8. *Aural*
   - Deafness
   - Vestibular
9. *Scar Formation*
   - Burns
   - Trauma
   - Lupus, etc.
10. *Neoplastic*
    - Local: Osseous, Myogenic, Lymphatic, Vascular
    - Central: Nerve
11. *Congenital*
    - Posture in utero
    - Trauma at birth
    - Ischemia? of muscle

Microscopic.—Microscopic examination of the "tumor" in young infants reveals no suggestion of hematoma but the almost complete disappearance of muscle cells and replacement by dense, fibrous tissue (figs. 4, 5 and 6). The few muscle fibers remaining are in varying stages of degeneration, showing swelling, vacuolization, some with many nuclei, an absence of striations, and changes in their staining characteristics. Some may even show calcification. Great masses of young fibrous tissue and fibrocytes are present. Giant cells may be present. A few vessels may show some perivascular infiltration, but all are patent. No hemorrhage or hemosiderin is present. As the age increases and the tumor begins to disappear, more and more of the muscle cells vanish and the fibrous tissue becomes dense and acellular, so that finally all that remains is dense inelastic hyaline connective tissue with nuclei arranged in parallel rows, thus resembling tendon.

Fig. 1 (P. O'D., white girl aged 6 weeks).—*A*, anterolateral and *B*, posterolateral views showing typical sternocleidomastoid tumor in muscular torticollis.

Fig. 2 (D. S., white girl).—*A*, aged 11 months, at time of removal of right sternocleidomastoid "tumor"; *B*, ten years later.

ANATOMY

We have noted that certain misinterpretations of the anatomy of the arterial supply and venous drainage of the sternocleidomastoid muscle have been perpetuated in the literature on torticollis. Many of these inconsistencies or misinterpretations have been used as the basis of theories of etiology, namely the theories of

Fig. 3.—*A*, sternal and clavicular heads; *B*, same tumor sectioned to show hard white cartilaginous character of tumor mass. "Tumor" was removed from infant 8 weeks old.

arterial and venous occlusion. De Gaetano [1] also noted anatomic inconsistencies in the literature on torticollis. We undertook, therefore, to dissect the sternocleidomastoid muscles from 10 stillborn infants after the injection of the veins and arteries in order to determine the anatomy of the sternocleidomastoid muscle and to ascertain, if possible, the anatomic relations of the sternocleidomastoid muscle to the etiology of muscular torticollis.

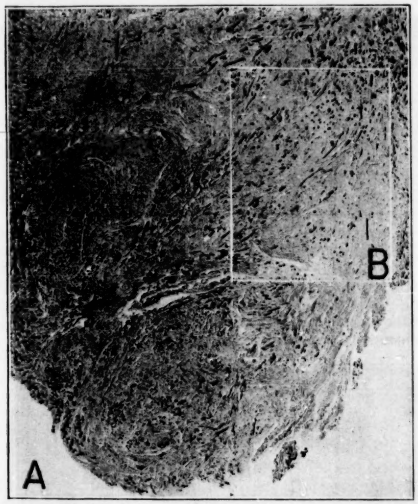

Fig. 4.—Section of entire sternocleidomastoid "tumor" resected from infant 15 weeks old. The muscle tissue is almost completely replaced by young fibrous tissue and fibroblasts. In some areas there is a round cell infiltration. The remaining muscle cells show varying degrees of degeneration. Hematoxylin and eosin.

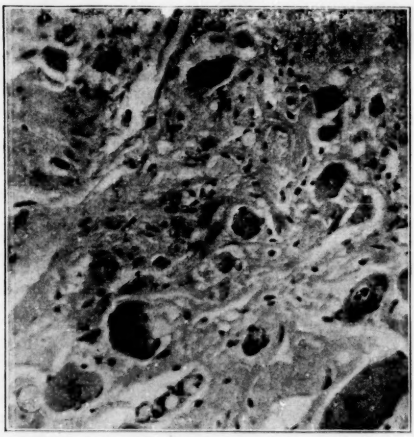

Fig. 5.—Same tissue shown in figure 4 *B* under high power.

The sternocleidomastoid muscle is a large, lateral, oblique muscle of the neck region which spans from the anterior, superior portion of the pectoral girdle to the mastoid region of the temporal bone of the skull. It is enveloped by a double layer of the external cervical fascia. It has two heads of origin and one composite head of insertion. It is usually made up of five or more distinct muscle bellies. Those found most consistently in our dissections (fig. 7 *A*, *A'*) were (1) superficial sternomastoid, (2) superficial sterno-occipital, (3) superficial cleido-occipital, (4) deep sternomastoid, (5) a double deep cleidomastoid. The nerve supply of the sternocleidomastoid muscle is made up of both visceral and somatic motor branches. Although its motor supply arises chiefly from visceral fibers of the spinal accessory nerve, it also receives both motor and sensory fibers from the 2d, 3d and 4th cervical nerves. The spinal accessory nerve runs deep to the muscle and usually lies between the bellies of the cleido-occipital portion of the muscle in its middle third in close approximation to the muscular branches from the occipital artery.

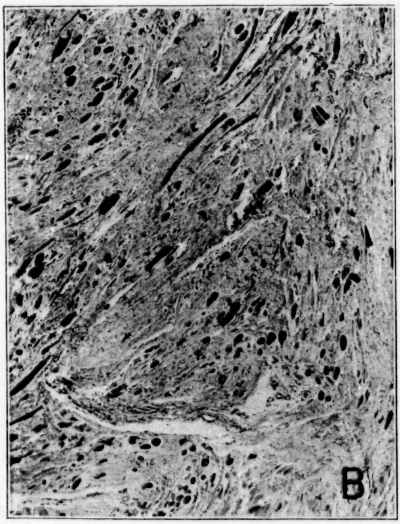

Fig. 6.—Same tissue shown in figure 4 *B* under low power.

The arterial supply (fig. 8) is quite extensive, arising from five or more main arterial sources. The occipital branch of the posterior auricular artery supplies the upper portion of the muscle near its aponeurotic insertion. This branch frequently anastomoses with the occipital artery. The sternocleidomastoid artery or muscular branches of the occipital artery supply the upper portion of the muscle with many large major branches which ascend and descend in each muscle belly. The sternomastoid branch of the superior thyroid artery supplies the middle and part of the lower third of the sternocleidomastoid muscle and sends two main branches, in addition to many small branches,

1. de Gaetano, L.: Patogenesi e cura chirurgica del torticollo muscolare negli adulti, Riforma med. **51**: 1463-1466, 1935.

down the two chief muscle divisions. A branch of the transverse scapular artery supplies the lower portion of the muscle by many secondary branches. An arterial branch arises from the ascending branch of the transverse cervical artery and supplies the lower lateral portion of the muscle.

The vessels of venous drainage of the sternocleidomastoid muscle (fig. 9) are even more profuse than are the vessels of the arterial supply. Not only is there an overlap of venous drainage areas, but also there are numerous communications between the main venous channels both within the muscle substance and those on its surface. The venous drainage of the sternocleidomastoid muscle occurs into all the major veins of the neck, the internal jugular, the external jugular, the anterior jugular, the transverse scapular, the occipital, the posterior auricular, the posterior facial and the anterior facial veins. As may be seen in figure 9 there are frequent and profuse communications not only between the main venous channels but also between their branches on the surface, and in a maze and rete within the muscle tissue itself.

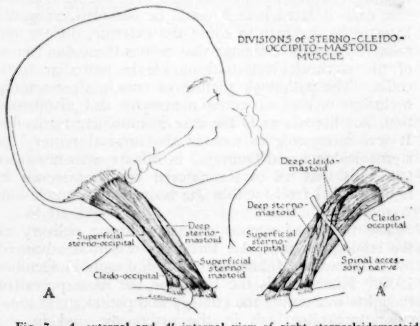

Fig. 7.—*A*, external and *A'* internal view of right sternocleidomastoid artery showing chief muscle bellies and their relation to spinal accessory nerve.

THEORIES OF ETIOLOGY

Nearly all the various types of pathologic disturbances which affect the human organism have been regarded at one time or another as being the etiologic factor of muscular torticollis. Some of the theories of etiology of muscular torticollis have been discussed in an excellent manner in the writings of Fitz Simmons,[2] Fisher,[3] Hough [4] and others and therefore are only mentioned in this paper. Others need clarification and rationalization in a more complete manner in the light of more recent observations by other authors (Sippel,[5] Bargellini,[6] Abels,[7] de Gaetano,[1] Kastendieck [8] and others) and in the light of our own anatomic dissections and clinical studies.

The intrauterine theory regards the deformity of muscular torticollis to be the result of abnormal pressure, position or trauma to the head, neck and particularly the sternocleidomastoid muscle during the intrauterine life. Investigators who have supported this view, in whole or in part, are, among others, Van Roonhuysen,

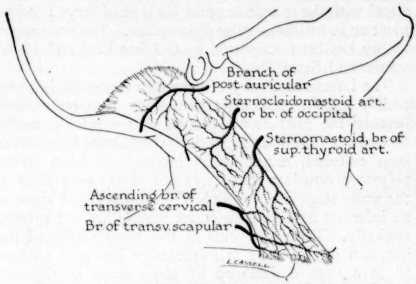
Branch of post. auricular
Sternocleidomastoid art. or br. of occipital
Sternomastoid, br. of sup. thyroid art.
Ascending br. of transverse cervical
Br. of transv. scapular

Fig. 8.—Chief arterial supply of sternocleidomastoid muscle.

Petersen,[9] Schmidt,[10] Morse,[11] Sippel,[5] Stern,[12] Jones and Lovett,[13] Colonna,[14] Rossi,[15] Bargellini,[6] de Gaetano,[1] Abels [7] and Kastendieck.[8]

The hereditary theory of muscular torticollis suggests that the deformity is due to abnormal formation or defects, of a hereditary nature, of the anlage of the sternocleidomastoid muscle. This theory has not been very well accepted. Some authors have associated torticollis on the hereditary basis with the presence of other congenital defects in cases of torticollis, and other authors with trauma during delivery to the sternocleidomastoid muscle already congenitally deformed.

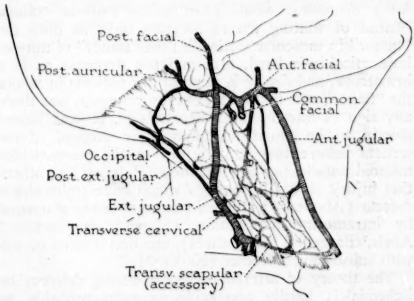

Fig. 9.—Chief venous drainage of sternocleidomastoid muscle, showing large number of venous anastomoses within and without the muscle tissue.

The hereditary theory has been supported by Joachimstal,[16] Krogius,[17] Schubert,[18] Hellstadius,[19] Aberle,[20] Isigkeit [21] and Schmid.[22]

2. Fitz Simmons, H. J.: Torticollis, J. A. M. A. **64:** 645-649 (Feb. 20) 1915; Congenital Torticollis: Review of Pathological Aspects, New England J. Med. **209:** 66-71, 1933.
3. Fisher, A. L.: Torticollis: A Review, Am. J. Orthop. Surg. **14:** 669-681, 1916.
4. Hough, G. deN., Jr.: Congenital Torticollis: Review and Result Study, Surg., Gynec. & Obst. **58:** 972-981, 1934.
5. Sippel: Der angeborene muskuläre Schiefhals, Deutsche. Ztschr. f. Chir. **155:** 1-48, 1920.
6. Bargellini, D.: Intervento precoce nel torticollo musculare congenito, Chir. d. org. di movimento **16:** 415-428, 1931.
7. Abels, H.: Die Entstehung des sogenannten angeborenen Schiefhalses, Wien. med. Wchnschr. **84:** 1094-1097, 1934; Ueber die Entstehungsweise des sogenannten angeborenen Schiefhalses, seine konstitutions- und erbpathologischen Beziehungen; die-unmittelbaren Entstehungsbedingungen, Ann. paediat. **152:** 4-34, 96-116, 1938.
8. Kastendieck, H.: Ueber die Aetiologie des angeborenen muskularen Schiefhalses, Zentralbl. f. Gynäk. **63:** 727-729, 1939.
9. Quoted by Fisher [3] and Morse.[11]
10. Schmidt, Meinhard: Zum Kapitel des Schiefhalses, Zentralbl. f. Chir. **17:** 570-572, 1890.
11. Morse, A. H.: Bilateral Congenital Caput Obstipum, Surg., Gynec. & Obst. **20:** 74-77, 1915.
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15. Rossi, D.: Un case di torticollo congenito in un fete estratto con parto caesareo, Riv. d'ostet. e ginec. prat. **10:** 277-282, 1929.
16. Joachimstal, mentioned by Fitz Simmons,[2] Fisher [3] and others.
17. Krogius, A.: Zur Pathogenese des muskularen Schiefhalses, Acta chir. Scandinav. **56:** 497-512, 1924.

(Footnotes continued on next page)

The neurogenic theory has been discarded for the most part and has not been associated with muscular torticollis in the literature of recent years. The pathology of the sternocleidomastoid muscle with muscular torticollis as seen by microscopic sections at various stages and ages in no way resembles that seen in muscle tissue with the spastic or paralytic type of nerve involvement or in neuromuscular dystrophies. The neurogenic theory has been supported by Golding Bird and Gallavardin and Savey.[23]

The infectious theory of muscular torticollis is based mainly on the pathologic picture as seen on section, because the microscopic picture is not wholly unlike that of an infectious myositis. Organisms have never been cultured, experimental inoculations have failed, polymorphonuclear leukocytes are rarely seen even in the acute stage and certainly the constitutional signs of an infection involving an entire muscle are not present clinically. The proponents of this theory believed the infection might occur in intrauterine life, post partum or in a muscle damaged by the trauma of delivery (Kader,[24] Volkmann, Mikulicz [9]).

The theory of birth trauma in our opinion is applicable to a large number of cases of muscular torticollis, not as it is commonly associated with a traumatic rupture of the muscle with the formation of a hematoma, but rather as the trauma causes almost complete derangement of the anatomy of the muscle. The muscle may have been damaged in intrauterine life by abnormal intrauterine position and pressure and may have had an associated secondary loss of nutrition due to vascular dissociation and trauma, thereby rendering it more susceptible to a traumatic delivery. The belief that muscular torticollis is secondary to a hematoma as a result of muscle tear seems to us to be untenable, for a hematoma would arise at the time of trauma instead of waiting ten to fourteen days as does the "tumor" in muscular torticollis; the "tumor" of muscular torticollis is hard, firm and not fluctuant as is a hematoma; and finally in none of our patients in whom the "tumor" was removed, even the youngest, was there any sign of intramuscular hemorrhage, or was hemosiderin to be found on microscopic section. Some writers believe that it is injury to the sternocleidomastoid muscle, per se (Stromeyer,[25] Janek [26]); others that injury occurs in muscles which have embryologic defects (Aberle [20]); others in muscles made abnormal by intrauterine malposition (Sippel,[5] de Gaetano,[1] Abels,[7] Bargellini [6] and others), one that trauma occurs with subsequent infection (Kader [24]).

The theory of arterial occlusion during delivery or ischemia is hardly acceptable or even probable as the primary etiologic agent of muscular torticollis. Volcker,[27] Nové-Josserand and Viannay,[28] Kempf [29] and Schloessmann [30] were the chief proponents of this theory. Much of the early work on this theory was done by Nové-Josserand and Viannay, who based their opinion on the fact that, when the injection of the arteries of the cervical region of stillborn infants was attempted with the head held in certain positions through which the head moves and rotates during birth, certain branches of the arteries supplying the sternocleidomastoid muscle did not fill. They based their opinion also on the belief that anatomically the sternocleidomastoid muscle is made up of three distinct muscle segments, an upper mastoid portion, a sternal head and a clavicular head, and that each of these segments has its own isolated arterial supply and venous drainage without overlap. These observations seem incorrect as our, and other, anatomic dissections would indicate. De Gaetano was also of the opinion that the concepts of the anatomy and vascular supply and drainage of the sternocleidomastoid muscle appearing in the literature on torticollis were incorrect. The distribution of the major arterial branches and vessels is very profuse (fig. 8). The arterial branches arise from rather widely separated sources, and therefore it does not seem logical that each isolated branch could be occluded, as would have to be the case to cause the extreme, diffuse and relatively complete change that occurs throughout most of the sternocleidomastoid muscle in muscular torticollis. The pathologic picture of muscle after arterial occlusion is that of extreme atrophy and disintegration, not fibrosis as is the case in muscular torticollis. It was interesting to note in the surgical removal of sternocleidomastoid "tumors" in infants with muscular torticollis that all of the arterial branches shown in figure 8 bled freely within the body of the muscle and "tumor."

The theory of venous occlusion during delivery as the etiology of muscular torticollis was first advanced by D. Stewart Middleton [31] of Edinburgh in October 1930. His work is the basis for the most prevalent thoughts concerning the etiology and pathology of muscular torticollis both in the orthopedic and in the pathologic literature of this country. He maintains that muscular torticollis and the "tumor" of the sternocleidomastoid muscle are the result of an acute temporary venous obstruction in the sternocleidomastoid muscle during labor, with resulting muscle necrosis. He bases his opinion on some of his own research, on his interpretation of that of Barney Brooks [32] of St. Louis, on the pathologic picture and on inference. We believe that the theory of Middleton is incomplete.

Muscles in which the complete venous drainage has been obstructed show a pathologic picture similar to that of muscular torticollis. It is on the similarity between the pathology of the "tumors" of muscular torticollis and that of experimental muscles which have had their venous drainage occluded, and on the erroneous idea that the venous drainage of the sternocleidomastoid muscle was through isolated vessels which did not anastomose or communicate, that the theory of venous occlusion as the etiologic factor of muscular torticollis is based. To quote Middleton: "The sternomastoid muscle is derived from three different muscular segments, . . . each portion retaining unaltered its own original arterial supply and consequently its own venous return." By the three different seg-

18. Schubert, A.: Die Ursachen der angeborenen Schiefhalserkrankung, Deutsche Ztschr. f. Chir. **167**: 32-59, 1921; Zur Aetiologie der Schiefhalserkrankung, Arch. f. klin. Chir. **142**: 646-657, 1926.
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21. Isigkeit, E.: Untersuchungen über die Heredität orthopädischer Leiden; der angeborene Schiefhals, Arch. f. orthop. u. Unfall-Chir. **30**: 459-494, 1931.
22. Schmid, W.: L'étiologie du torticolis musculaire, Presse méd. **45**: 1189-1191, 1937.
23. Gallavardin, L., and Savey, P., quoted by Middleton.[31]
24. Kader, B.: Das Caput obstipum musculare, Beitr. z. klin. Chir. **17**: 207, 1896.
25. Stromeyer, L., quoted by Fisher [3] and others.
26. Janek, J.: Beitrag zur traumatischen Aetiologie der Tortikollis, Ztschr. f. Orthop. **71**: 290-295, 1941.
27. Volcker, quoted by Fitz Simmons [2] and Fisher.[3]
28. Nové-Josserand, G., and Viannay, C.: Pathogénie du torticollis congénital, Rev. d'orthop. **7**: 397, 1895.
29. Kempf, F.: Ueber Ursache und Behandlung des Caput obstipum musculare, Deutsche Ztschr. f. Chir. **73**:351, 1904.
30. Schloessmann, H.: Die Entstehung des angeborenen muskularen Schiefhalses, Beitr. z. klin. Chir. **71**: 209-253, 1911.
31. Middleton, D. S.: The Pathology of Congenital Torticollis, Brit. J. Surg. **18**: 188-204, 1930.
32. Brooks, B.: Pathologic Changes in Muscle as a Result of Disturbances of Circulation, Arch. Surg. **5**: 188-216 (July) 1922.

ments Middleton means an upper mastoid portion, a sternal head and a clavicular head. To quote Middleton further: "Nové-Josserand and Viannay, investigating the circulation of the sternocleidomastoid muscle in the stillborn fetus, found that these three systems of blood supply were independent, each supplying its own portion of the muscle and failing to communicate with each other or surrounding arteries. If this is so, it follows,

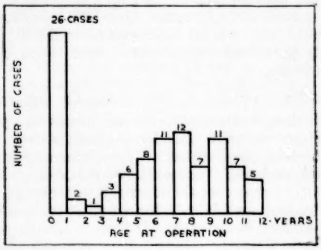

Fig. 10.—Incidence of torticollis cases at the age of operation; total series of 101 cases.

of course, that the venous systems are also independent." As may be seen on figure 9, drawn from our dissections, the number of venous anastomoses both within and without the sternocleidomastoid muscle are numerous, and it is difficult to see how the obstruction of one or more veins could effect the complete generalized destruction and degeneration of the sternocleidomastoid muscle which is seen in muscular torticollis.

Middleton reproduced some of the experimental work of Barney Brooks of St. Louis and attempted to apply them to muscular torticollis and the sternocleidomastoid muscle. Brooks ligated the veins from an isolated rectus femoris muscle in a dog and produced obvious changes in the muscle: "Within an hour the muscle became swollen, hard and a dark blue." These changes, however, are not similar to the changes which occur in the sternocleidomastoid muscle either as to the immediate pathologic change or as to the time at which swelling and tumefaction occur in muscular torticollis. If the observations of Brooks are accepted, cases in which complete venous obstruction occurs during delivery, a tumor, hard and enlarged, should be felt or noted in the sternocleidomastoid muscle soon after the initial trauma and delivery. This is not the situation, for these tumors are rarely recognized before the tenth day. Middleton also states that the small uppermost portion of the muscle close to the mastoid attachment is seldom involved because of the fact that the veins pass deep and down to the main venous trunks. This has not been the case in our group of cases of 26 infants under 1 year of age from whom the tumor was resected. We found that the pathologic picture was that of a diffuse involvement usually throughout the entire muscle and that if any muscle cells were present at all they were in various stages of degeneration or were in isolated marginal longitudinal strands, not in transverse zones.

We therefore cannot subscribe to the theory that primary venous occlusion during delivery, per se, is the origin of muscular torticollis and the sternocleidomastoid "tumor." A few theoretical questions may be asked:

1. Since the most frequent single type of delivery in muscular torticollis is the breech delivery, how can venous occlusion be caused for a time long enough to cause the extensive reaction exhibited in the pathologic changes of muscular torticollis, when in this type of delivery the head and neck float freely until the last five to seven minutes in which the delivery must be accomplished in order to get a viable child?

2. If acute venous obstruction could occur to the extent of obstructing the venous drainage, why is only the sternocleidomastoid muscle involved, and why are not the head, brain and other muscles of the neck involved, as some of these structures are more labile and sensitive to anoxemia?

3. Why have investigators been unable to demonstrate venous thrombosis consistently in the tumors of muscular torticollis?

CLINICAL OBSERVATIONS AND SURGICAL RESULTS

Our clinical observations are based on a consecutive series of 101 patients with muscular torticollis operated on since 1930 at the Children's Memorial Hospital, Chicago. During the earlier years of these studies, operation was reserved for older patients presenting cordlike contractures on the affected side and the usual facial deformity with associated distortions of the head, cervical spine and eyes. More recently the age at the time of operation has dropped decidedly and is now chiefly below 3 months. Operative treatment of torticollis in early infancy seems to us to be fully justified, as it is a means of preventing the usual deformity instead of waiting until such deformity has developed and then attempting to correct it. The results of surgical correction in young infants have been so uniformly successful that we now feel operation is the treatment of choice in the more severe cases. Reference to figure 10 and table 2 will reveal the age distribution of the patients in this series. Twenty-six patients have been operated on under 1 year of age. Of these 15 were under 3 months of age, the youngest 3 weeks. In this entire series the sex distribution was essentially

TABLE 2.—*Operations for Torticollis on Children Less Than One Year of Age*

1 case at 3 weeks of age	1 case at 16 weeks of age
1 case at 5 weeks of age	1 case at 18 weeks of age
6 cases at 6 weeks of age	1 case at 19 weeks of age
3 cases at 8 weeks of age	1 case at 20 weeks of age
1 case at 9 weeks of age	1 case at 32 weeks of age
1 case at 10 weeks of age	1 case at 36 weeks of age
1 case at 11 weeks of age	1 case at 39 weeks of age
1 case at 12 weeks of age	3 cases at 44 weeks of age

TABLE 3.—*History of Type of Birth*

Normal (or no record)	30
Difficult normal	8
Forceps vertex	23
Breech	30
Shoulder	1
Cesarean	3
Unknown	6

equal, males 48, females 53. The right side was involved in 56, the left in 45. These figures correspond to those of other writers. In no case was bilateral involvement of the sternocleidomastoid muscle found.

A history of the type of birth is most significant, but accurate details are difficult to obtain. However, data were recorded in 95 of these cases (table 3).

The birth histories in the cases in which operation was performed under 1 year of age are probably more accurate. These revealed a breech position in about 50 per cent and abnormal deliveries in most of the

remaining. The probability of an intrauterine torticollis preventing engagement of the fetal head in the pelvic inlet and thereby causing a breech presentation seems quite obvious. This possibility has been suggested previously by Isigkeit.[21] If this is correct, close inspection of the head and neck by the obstetrician and pediatrician in all cases of breech delivery might well reveal significant findings. Antepartum roentgenograms (fig. 11) in 1 case were available for study. These showed the fetus in breech position with the head in right lateral flexion. This infant was delivered by cesarean operation. Torticollis was present at birth and became increasingly pronounced. A tumor was noted at the age of 14 days. Tumors involving the sternal and clavicular portions of the right sternocleidomastoid muscle were removed at 11 months of age. This case supplements the observations of Sippel referred to elsewhere in this paper.

Associated pathologic conditions other than the clinical findings of torticollis were of low incidence in this series. Erb's palsy occurred three times, once on the same side as the torticollis and twice on the opposite side. One patient had a congenital short arm or the

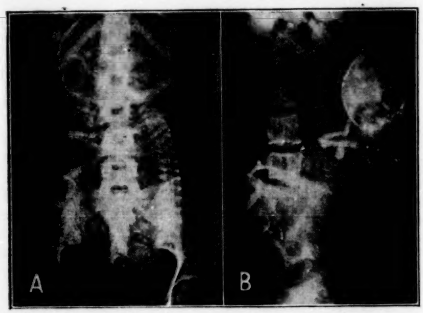

Fig. 11.—*A*, lateral view of intrauterine infant; *B*, anterior oblique view showing head flexed laterally against right shoulder. Infant was delivered by cesarean section and had a right muscular torticollis, the tumor of which was resected at 11 months of age.

involved side. Three patients were operated on for hypertrophic pyloric stenosis. We have no opinion as to the significance of hyperplasia of the pyloric musculature in its association with torticollis but wish to record this observation.

A familiar history of torticollis emphasized by some writers did not appear to be important in our group of cases. Two mothers had untreated muscular torticollis with deformities, and the brother of 1 patient had a definite fibrous cord replacing the sternomastoid muscle and a mild degree of facial asymmetry.

The presence of a tumor had been noted by the parents in 40 cases on the tenth to the fourteenth day after birth. These tumors increased in size for from two to five weeks and then remained constant in several cases for as long as eighteen months. Others subsided quite rapidly.

In 73 cases the torticollis deformity was noted within the first three months of life. No definite record was obtained in the other cases. In several instances the deformity was first noticed by school teachers or others not in the patient's family.

The follow-up observations in this entire series varies from a few weeks to eleven years, with an average of about four years. With but few exceptions the results have been most gratifying. Correction of the deformity and full range of motion is to be expected. Slight flattening of the neck over the involved muscle and some apparent increase of the prominence of the sternoclavicular area may be present. Five of this series showed some limitation of rotation. This occurred in those older patients in whom release of the muscle from the mastoid process had been attempted. Three of these have had successful secondary operations with release of the sternal and clavicular heads. Three patients developed keloid scars. One death occurred in this series.

SELECTION OF CASES FOR SURGICAL TREATMENT

Little disagreement as to the indications for operation is encountered when considering patients over 5 years of age. The presence of a gross deformity involving the head, neck and face and the existence of an inelastic fibrous cord replacing the normally soft, elastic, sternocleidomastoid muscle call for surgical correction. In young infants, however, the indications for surgery are less clearly defined. Many infants showing tumors at 2 weeks of age will show no deformity after several months. Others show a rapidly increasing torticollis deformity and distorted contours of the face and head. We have reserved surgery for those cases presenting the more pronounced changes both of the muscle and of the head, the most important indications being the size of the tumor, the progressive shortness of the sternocleidomastoid muscle and increasing deformity of the head and neck.

OPERATION

No attempt will be made to describe the many procedures applicable to the older cases. In infants of but a few weeks of age, great care and caution must be exercised in removing the tumor mass. A transverse incision is made in the lower skin crease just above the clavicle. The platysma muscle is split by blunt dissection. The "tumor" is then separated from adjacent structures on all surfaces by blunt dissection with a small curved forceps. The sternal portion and the clavicular portion are isolated, a small forceps is passed beneath the muscle and the muscle is divided by multiple transverse incisions until freed from the clavicle. The tumor is then elevated from the deeper structures of the neck and delivered from the wound. The spinal accessory nerve is isolated and freed by cutting through the tumor so as to spare it. The proximal portion of the "tumor" is cut transversely at about the junction of the upper and middle third. All bleeding points are ligated. The wound is closed by deep sutures and the skin by subcuticular suture. A pressure dressing is applied. The head is held in an overcorrected position with starch bandages for two weeks. Active and passive stretchings are then carried out.

COMMENT

We are of the opinion that muscular torticollis does not result from any one single type of pathologic disturbance but from a number of contributory factors which may act separately or together. In muscular torticollis probably intrauterine malposition, trauma during delivery and a degree of local ischemia of the sternocleidomastoid muscle resulting from intrauterine malposition act together in varying degrees to cause the pathologic entity as we know it.

One certainly cannot dismiss intrauterine malposition and pressure as a contributory cause of muscular torti-

collis. This has been demonstrated in a case of ours and in the cases of other authors (Sippel [5]) by the fact that roentgenograms (fig. 11) taken before delivery showed a lateral deflection of the head with rotation, and subsequent delivery by cesarean section revealed a child who had the same deformity post partum as that seen ante partum in the roentgenogram. Then too, immediately after delivery there have been external signs, on infants who had muscular torticollis, of changes which could have occurred only through protracted pressure and malposition (Abels [7] and Sippel [5]). The most common of these are a well defined change in the size, shape and position of the ear on the side affected, facial asymmetry of a type and severity which must have been present in intrauterine life and a typical torticollis position with the head tilted toward the affected side and facing toward the normal side. When these findings are present immediately after birth, even before the formation of a "tumor," they undoubtedly are due to some protracted intrauterine malposition or pressure. It is reasonable that if, in intrauterine life, the head should be laterally flexed and the shoulder elevated, the acromion, clavicle and head of the humerus could be forced against the sternocleidomastoid muscle, the head and the neck. As a result of this pressure the ear would be deformed and a cervical scoliosis and a facial asymmetry would develop. As a result too of the constant pressure on the sternocleidomastoid muscle by the shoulder during a period when it is undergoing rapid growth and differentiation, it is logical to assume that its development might be arrested by the constant pressure, and it is quite possible that areas of localized ischemia may exist over a relatively long period of time in intrauterine life. The pressure might well cause the lack of development of adequate vascularity during the period of growth of the muscle, thereby causing a relative ischemia.

Muscular torticollis also is most frequently associated with traumatic types of delivery. This is demonstrated statistically by our birth histories and by the birth records of nearly every author who has described a series of similar cases. The prevalence of difficult breech and long and hard forceps deliveries in our series is far too great to be dismissed. It is not hard to understand how the sternocleidomastoid muscle could be subjected to a large number of traumatic strains and stresses during a delivery as short even as a breech delivery. The factors of extension, torsion, traction and pressure certainly could be of consequence, since the sternocleidomastoid muscle is long and functions at the end of relatively long levers. The muscle traumatized in delivery may have the subsequent disintegration and necrosis of the muscle fibers, and as a result of the products of degeneration a nonspecific, sterile inflammatory reaction may be started. This process takes a number of days and thereby may account for the tumefaction of the sternocleidomastoid muscle. The muscle so traumatized may well be one which previously has been rendered atrophic, partially ischemic and shortened as the result of intrauterine malposition, pressure of the shoulder and lateral flexion of the head. These views are supported by some excellent work and observations in recent years by Sippel,[5] Bargellini,[6] Abels [7] and Kastendieck,[8] whose views and conclusions coincide in many respects with ours.

We believe, therefore, that intrauterine malposition, and the possible pressure and ischemia which may result in the sternocleidomastoid muscle therefrom, contribute to the cause of muscular torticollis by rendering the muscle definitely atrophic, maldeveloped, fibrous, shortened and ischemic. These changes may well cause the muscle in some cases to be liable to damage with a traumatic or even a normal delivery, which would not damage the normal sternocleidomastoid muscle.

CONCLUSIONS

1. The "tumor" seen in muscular torticollis of early infancy is not a hematoma but a fibroma found within the substance of the sternocleidomastoid muscle.

2. Intrauterine torticollis is a potent factor in causing a breech presentation at birth.

3. Intrauterine position, trauma at birth and a preexisting change of the involved muscle are etiologic factors of muscular torticollis.

4. Surgical treatment in later childhood will correct the deformity of torticollis.

5. Surgical treatment of torticollis in early infancy will not only correct the torticollis but prevent the associated deformities of the head, face and spine.

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GLOBIN INSULIN WITH ZINC IN THE TREATMENT OF DIABETES MELLITUS

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"Globin insulin" was announced by Reiner, Searle and Lang [1] in 1939. It is now available in the open market as globin insulin with zinc in U 80 concentration. Globin insulin with zinc is a clear aqueous solution, having a p_H of about 3.7 and composed of 3.04 mg. of globin (a simple protein derived from hemoglobin), 0.24 mg. of zinc (present as zinc chloride) and 80 units of insulin per cubic centimeter; 0.18 per cent of cresol is added as preservative. Observations on the action and clinical use of globin insulin with zinc have been published by Bauman,[2] Marks,[3] Andrews and Groat,[4] Duncan and Barnes,[5] Bailey and Marble,[6] Levitt and Schaus [7] and Lawrence.[8] A consideration of these reports and the experience of treating more than 50, nearly all ambulant, cases of diabetes with globin insulin with zinc [9] furnish the material for this presentation.

ONSET OF RESPONSE OF THE BLOOD SUGAR TO GLOBIN INSULIN

A drop in blood sugar begins, after an injection of protamine zinc insulin, in four to six hours; the response is considerably delayed. Regular insulins (crystalline and unmodified) act immediately. The effect of globin insulin with zinc on the blood sugar in rabbits developed

1. Reiner, L.; Searle, D. S., and Lang, E. H.: Insulin Preparations with Prolonged Activity: I. Globin Insulin, Proc. Soc. Exper. Biol. & Med. **40:** 171, 1939.
2. Bauman, L.: Clinical Experience with Globin Insulin, Am. J. M. Sc. **198:** 475, 1939; Further Experience with Globin Insulin, ibid. **200:** 299, 1940; Globin Insulin, Bull. New England M. Center **5:** 17, 1943.
3. Marks, H. E.: A New Globin Insulin: The Importance of Carbohydrate Distribution in the Control of Diabetes with the Modified Insulins, M. Clin. North America **24:** 649, 1940.
4. Andrews, G. B., and Groat, W. A.: Globin Insulin, New York State J. Med. **40:** 913, 1940.
5. Duncan, G. G., and Barnes, C. E.: Action of Globin Insulin Compared with That of Crystalline, Unmodified and Protamine Zinc Insulin, Am. J. M. Sc. **202:** 553, 1941.
6. Bailey, C. C., and Marble, A.: Histone Zinc Insulin, Globin (Zinc) Insulin and Clear Protamine Zinc Insulin, J. A. M. A. **118:** 683 (Feb. 28) 1942. (Data obtained from reprint, which contains additions to the original publication.)
7. Levitt, A., and Schaus, J. P.: Clinical Experience with Globin Insulin, M. Times, New York **70:** 187, 1942.
8. Lawrence, R. D.: Globin-Zinc-Insulin: Some Experiments, Brit. M. J. **2:** 103, 1943.
9. Dispensed by Burroughs, Wellcome & Co. for clinical trial.

somewhat more slowly than that of regular insulin (Reiner, Searle and Lang [10]). In human beings globin insulin with zinc brought about a lowering of the blood sugar within two hours (Duncan and Barnes; [5] Bailey and Marble [6]). This moderate retardation of the starting point of the action of globin insulin with zinc is compensated for by Bauman [2] by administering globin insulin with zinc thirty to forty-five minutes (forty-five to sixty minutes has been suggested by Bailey and Marble [6]) before breakfast, which should accomplish the control of the postprandial hyperglycemia better than if globin insulin with zinc were given directly before or directly after breakfast, as is the custom with regular insulin.

DURATION OF EFFECT OF GLOBIN INSULIN ON THE BLOOD SUGAR

The duration and degree of the effect of any long-acting insulin on diabetic patients vary considerably and cannot be accurately defined. The extent to which insulin is antagonized (insulin resistance), and the availability of the body's own insulin, the endogenous insulin, are far from constant in every diabetic patient.

TABLE 1.—*Protamine Zinc Insulin Administered Every Other Day Controls the Diabetes of Some Patients*

Date	Urinary Dextrose, per Cent P. M.	Urinary Dextrose, per Cent A. M.	Blood Sugar, Mg. per 100 Cc.	Protamine Zinc Insulin Units Every Other Day	Comment
1940					
Oct. 2	0.0	0.0	182	24	Diet throughout C. 134, P. 104, F. 123, Cal. 2,120
Dec. 27	0.7	0.0	250	32	
1941					
Feb. 28	0.0	0.0	206	40	No hypoglycemic reactions
May 16	0.0	0.0	186	46	
Dec. 5	0.0	0.0	188	72	All blood sugars estimated after breakfast
1942					
Feb. 13	0.3	0.1	171	80	
May 20	0.0	0.0	223	80	Increasing severity of diabetes probably due to nervous strain associated with business worries
Sept. 25	0.0	0.0	133	80	
1943					
Feb. 26	0.0	0.0	146	76	
July 23	0.0	0.0	160	76	
Oct. 1	0.4	0.0	217	70	
Dec. 3	0.0	0.0	174	76	

Man aged 44, diabetes for 7 years, at first controlled by diet only; later insulin became necessary; glycosuria successfully regulated by insulin injections every other day, indicating that protamine zinc insulin may be effective for more than 48 hours.

Furthermore, the amount of carbohydrate in the diet and its distribution throughout the twenty-four hours, the initial level of the blood sugar, whether high or low, exercise, menstruation and nerve strain are added factors that cause the response of the blood sugar to insulin to vary not only from patient to patient but also in the same individual from day to day. Consequently no hard and fast rule can be formulated in regard to the duration of the effect of insulin on the blood sugar, and only what might be termed "limits of error" can be proposed.

The estimates of the capacity of globin insulin with zinc to maintain a reduction in the blood sugar range from fifteen hours (Andrews and Groat; [4] Lawrence [8]) to twenty-four hours in a few cases (Duncan and Barnes; [5] Bailey and Marble [6]). If globin insulin with zinc does not act for a full twenty-four hour period then this insulin will not control those very severe cases of diabetes in which the blood sugar rises during the night while fasting. The actual effect on the blood sugar can be obtained only by making frequent determinations during twenty-four hour stretches while the subject is fasting or receiving small amounts of carbohydrate at short, regular intervals.

Duncan and Barnes [5] report studies on 5 persons, 1 nondiabetic and 2 with mild and 2 with severe diabetes with doses of globin insulin with zinc varying from 15 to 80 units. These subjects received fruit juice containing 20 Gm. of carbohydrate every two hours during the tests. The blood sugar dropped, or was maintained approximately at its low point, for twelve hours in 2, for sixteen hours in 2 and for twenty-four hours in 1. Bailey and Marble [6] found in 5 fasting diabetic patients receiving 7 to 11 units of globin insulin with zinc that the blood sugar dropped or remained constantly (or almost constantly) at its low level for at least fifteen hours; in 4 cases the blood sugar was definitely higher (average rise of 154 mg.) at the twenty-third hour; in 1 instance the depressed blood sugar persisted for twenty-four hours.

From all these observations it seems fair to conclude that the duration of the positive effect of globin insulin with zinc on the blood sugar is, as a rule, twelve to sixteen hours and occasionally twenty-four hours.

A note regarding the duration of the effect of protamine zinc insulin on the blood sugar is in order so that in discussing the clinical application of globin insulin with zinc there may be a satisfactory basis for comparing these two insulins. Protamine zinc insulin often results in a drop in the blood sugar which may be maintained for more than forty-eight hours (Wilder and Wilbur [11]). The very prolonged effect of protamine zinc insulin in some cases is well illustrated by a patient (table 1) who for almost four years has been controlled by insulin administered every other day; during the last two years the dose on alternate mornings has been between 70 and 80 units of protamine zinc insulin. However, regulation of the diabetes by such a procedure is unusual, since protamine zinc insulin would be expected to result in early morning hypoglycemic reactions. It is known that diabetic patients requiring 20 to 30 units or less of protamine zinc insulin are as a rule readily managed by one daily injection. The explanation of this paradox lies in the fact that small doses of protamine zinc insulin act for a shorter length of time than large amounts. Lawrence [12] in 1939 proposed an approximate schedule according to which 10 units or less of protamine zinc insulin acted for six to eight hours, and 30 units or more for twenty-four hours or longer.

This analysis of the effects of globin insulin with zinc and protamine zinc insulin on the blood sugar enables us to conclude that in the mild cases in which only postprandial hyperglycemia exists and not with a nocturnal (fasting) rise of blood sugar, requiring about 20 units of protamine zinc insulin, the action of these two insulins is almost identical and, as will be shown later, equally serviceable. However, it is necessary to bear in mind that about 3 units of globin insulin with zinc accomplishes what 4 units of protamine zinc insulin does and that the distribution of the diet calls for a considerable luncheon, or extra food at about 3:30 or 4 p. m. with globin insulin with zinc and a night meal with protamine zinc insulin.

10. Reiner, L.; Searle, D. S., and Lang, E. H.: On the Hypoglycemic Activity of Globin Insulin, J. Pharmacol. & Exper. Therap. **67**: 330, 1939.

11. Wilder, R. M., and Wilbur, D. L.: Diseases of Metabolism and Nutrition: Review of Certain Recent Contributions, Arch. Int. Med. **59**: 329 (Feb.) 1937.

12. Lawrence, R. D.: Zinc-Protamine-Insulin in Diabetes, Brit. M. J. **1**: 1077, 1939.

MANAGEMENT OF INJECTIONS AND DIET WITH GLOBIN INSULIN

Globin insulin with zinc is measured and injected like other insulins; since it is a clear fluid, agitation before filling the syringe is not necessary. It should not be combined in the same syringe with protamine zinc insulin. Mixtures of globin insulin with zinc and regular insulin have thus far not been attempted and would serve no apparent purpose. When the patient receives protamine zinc insulin in addition to globin insulin with zinc, the two forms of insulin are given by separate injections.

Globin insulin with zinc is administered forty-five to sixty minutes before breakfast. This interval before the meal allows for the lag of onset of the response of the blood sugar to globin insulin with zinc, which is somewhat less than two hours (Bauman,[2] Duncan and Barnes,[5] Bailey and Marble [6]).

The number of units of globin insulin with zinc necessary for the control of diabetes is distinctly less than the dosage of protamine zinc insulin, according to Duncan and Barnes [5] and in my experience. More precise statements are made by Andrews and Groat,[4] who find that about three fourths of the protamine zinc insulin unitage is the requirement of globin insulin with zinc, and by Levitt and Schaus,[7] who calculated the equivalent needs of persons with mild, uncomplicated diabetes as being 56 units of regular insulin, 33 of protamine zinc insulin and 22 of globin insulin with zinc, and of patients with severe uncomplicated diabetes as 93 units of regular insulin, 65 of protamine zinc insulin and 39 of globin insulin with zinc.

Globin insulin with zinc calls for an extra feeding between 3:30 and 4 p. m. to check the low blood sugar developing at that time. Marks [3] has been successful in eliminating this intermediate meal by distributing the starches throughout the day so that 20 per cent is taken at breakfast, 40 to 50 per cent at lunch and 30 to 40 per cent at dinner. Some patients welcome the opportunity to have "afternoon tea," while others, especially business men, regard it as a burden.

Material and Methods of This Study.—Nearly all the patients were managed by office visits. The one notable exception was the patient in table 5, who was hospitalized for an extensive operation and not because of his diabetes. The published observations on globin insulin with zinc appeared sufficiently detailed and extensive to warrant the attempt to treat ambulant diabetic patients with globin insulin with zinc, and I believe that this conclusion has been justified. No systematic comparative study between globin insulin with zinc and the other insulins was made. The patients were largely those coming as new cases for treatment. When protamine zinc insulin or regular insulin proved unsatisfactory in any subject, for one reason or another, globin insulin with zinc was tried and vice versa, which accounts for the few instances when a comparison between the various insulins is noted. In other words this presentation reports a trial of the feasibility of the routine use of globin insulin with zinc and not primarily its superiority or inferiority to other insulins.

There has been much dispute as to what criteria constitute good and poor control of diabetes, and an explanation of these terms as used on the charts is in order. The diabetic patients were checked on office visits by an analysis of evening and morning specimens of urine and a blood sugar determination. The regulation of the diabetes was classified as good if on two successive visits the urine samples were free from sugar or if only 1 of the 4 specimens, either an evening or a morning voiding, contained a small amount of dextrose, 0.6 per cent or less, and the other samples were clear. When these objectives could not be achieved, the control was designated as poor.

The diets prescribed contained comparatively low quantities of carbohydrate 130 to 150 Gm. per day. I have found such amounts of starch acceptable to the patient, and the control of the diabetes has been much more readily accomplished than when larger amounts of carbohydrate were eaten. Children, and persons engaged in manual labor, require a high carbohydrate intake. In the present series the children received such a diet. There were no subjects carrying out hard physical work.

Mild Cases of Diabetes Requiring 30 Units or Less of Insulin.—It is established that such patients are usually well controlled by a single daily injection of protamine zinc insulin. The reason for this is, as has been previously discussed, that small doses of protamine zinc insulin probably act for less than twenty-four hours. Fourteen patients with mild diabetes were treated with globin insulin with zinc (table 2). Ten of these in all likelihood would have done equally well with protamine zinc insulin, which was not tried. The

TABLE 2.—*Patients with Mild Diabetes Requiring 30 Units of Insulin or Less*

Case	Sex	Age	Insulin Units: Regular	Insulin Units: Protamine Zinc	Insulin Units: Globin with Zinc	Control Diabetes	Comment
30	♂	64	..	12	..	Good	Local reactions with protamine, none with globin
					12	Good	
42	♂	49	..	30	..	Poor	Control diabetes fluctuates considerably with protamine, or protamine and regular mixtures. Globin because it acts for less than 24 hours in this case, is of distinct advantage for accurate adjustment
			15	10		Poor	
					18	Good	
					26	Good	
8	♂	39	..	22	..	Good	Morning headaches with protamine, none with globin
					20	Good	
19	♂	61	..	8	..	Poor	Local reactions with protamine, none with globin
					20	Good	
Ten (10) cases	♂ and ♀	15 to 73	..	..	12 to 30	Good	These 10 patients probably would have done equally well with protamine

The control of the diabetes, as a rule, is equally satisfactory with protamine zinc insulin or globin insulin with zinc.
There were 2 patients (30 and 19) with allergy to protamine zinc insulin who were not sensitive to globin insulin with zinc.
Patient 8 had morning headaches that disappeared when protamine zinc insulin was replaced by globin insulin with zinc.
In case 42 satisfactory control was accomplished by globin insulin with zinc after protamine zinc insulin alone or protamine zinc insulin and regular insulin mixtures failed.
Conclusion: In mild diabetes globin insulin with zinc is as effective as protamine zinc insulin and in some instances preferable to it.

remaining 4 had diabetes in which protamine zinc insulin was not satisfactory, and recourse was had to globin insulin with zinc. There were 2 patients allergic to protamine zinc insulin who were not sensitive to globin insulin with zinc. Bauman [2] has stressed the infrequent sensitivity of human beings to globin insulin with zinc. One patient had morning headaches, which disappeared when protamine zinc insulin was replaced by globin insulin with zinc. In 1 diabetic patient satisfactory control was accomplished by globin insulin with zinc after protamine zinc insulin alone or protamine zinc insulin and regular insulin mixtures failed. It may be concluded that in persons with mild diabetes globin insulin with zinc and protamine zinc insulin are equally effective but that there are a few cases in which, because of certain idiosyncrasies, globin insulin with zinc is preferable to protamine zinc insulin and it is reasonable to assume that in the long run some instances will be forthcoming in which the opposite will hold true.

TABLE 3.—*Patients with Severe Diabetes Requiring More Than 30 Units of Insulin and Treated with Globin Insulin with Zinc Only for a Considerable Period*

Case	Sex	Age	Insulin Units: Regular	Protamine	Globin	Control Diabetes	Comment
9	♀	52	±20*	±20*	..	Poor	Daily adjustment insulin; attendant claims fewer reactions and less glycosuria with globin
					30+	Poor	
35	♂	59	..	44	..	Good	Hypoglycemic reactions with protamine, none with globin
					36	Good	
16	♂	44	..	52	..	Good	Severe morning reactions with protamine, poor control with globin; good result with mixture of protamine and regular
					40	Poor	
			32	16	..	Good	
15	♀	53	..	40	..	Poor	Same results as in preceding case
					40	Poor	
			22	11	..	Good	
32	♀	62	..	60	..	Poor	Globin alone preferable to protamine alone
					42	Good	
20	♀	27	24*	40*	..	Poor	Poor results with globin alone or protamine and regular by separate injections; good result with protamine and globin by separate injections
					46	Poor	
				18	30	Good	
31	♀	55	..	50	..	Good	Insists that 2 doses of protamine, 25 units each, are the most satisfactory
					50	Poor	
36	♂	50	..	50	..	Poor	Single injections of protamine or globin yield poor results; combination of protamine and globin by separate injections satisfactory
					65	Poor	
				40	38	Good	
Seven cases (7) ♂ and ♀		14 to 62	..	..	42 to 110	Good	Seven cases treated with large doses of globin with satisfactory results; other insulins not tried

* Indicates regular and protamine zinc insulin given by separate injections, otherwise as mixtures in the same syringe.
Some patients (3 cases) with severe diabetes react more favorably to globin insulin with zinc than to protamine zinc insulin and vice versa (1 case), many patients can be controlled only by mixtures of protamine zinc insulin and regular insulin or by dual injections of globin insulin with zinc and protamine zinc insulin (4 in this table; for additional ones see table 6); a single injection of globin insulin with zinc is often satisfactory (10 cases).

Patients with Severe Diabetes Requiring More Than 30 Units of Insulin Given Globin Insulin with Zinc Only (table 3).—Some patients with severe diabetes react more favorably to globin insulin with zinc than to protamine zinc insulin (3 patients) and vice versa (1 patient). Some patients can be controlled only by mixtures of protamine zinc insulin and regular insulin or by dual injections of globin insulin with zinc and protamine zinc insulin (4 patients [13]). In many instances a single injection of globin insulin with zinc is satisfactory (10 patients). Bauman [2] has published a number of protocols showing how large doses of globin insulin with zinc can control some diabetic patients very successfully over long periods.

Patients with Severe Diabetes Requiring Dual Injections: One of Protamine Zinc Insulin and One of Globin Zinc Insulin.—It has been appreciated ever since the introduction of protamine zinc insulin that many diabetic patients cannot be controlled by one daily injection, which is exceedingly disappointing since it has become a prerequisite of successful insulin administration that a single injection in twenty-four hours and no more should be used. Tolstoi [14] solves this problem by countenancing unlimited glycosuria, which some patients do not tolerate very well and only relatively few physicians versed in the intricacies of diabetes endorse. The desire for the achievement of proper regulation of severe diabetes by one daily injection of insulin has resulted in two schools of thought: (1) one desires to formulate an ideal insulin that will fill the needs of most diabetic patients (mixture 3 parts of regular insulin to 2 parts of protamine zinc insulin, Ulrich; [15] mixture 2 parts of regular insulin and 1 part of protamine zinc insulin, Colwell; [16] modified protamine zinc insulin, 1 part of regular insulin to 1 part of protamine zinc insulin, p_H adjusted to 7.2, MacBryde [17]). The other is to grade the mixture of regular (2) insulin and protamine zinc insulin so as to meet the needs of the patient (Wilder,[18] Peck,[19] Sparks and John [20]) or to give protamine zinc insulin and regular insulin by separate injections. The first is an unyielding procedure that benefits only the majority of patients with diabetes but not all, while the latter is flexible and can be adapted to every patient's metabolic demands. The universal application of this scheme is the more appealing of the two. I have found that the same pliable control of diabetes accomplished by adjusting the pro-

13. For additional instances see table 6.

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15. Ulrich, H.: Clinical Experiments with Mixtures of Standard and Protamine Zinc Insulins, Ann. Int. Med. **14**: 1166, 1941.
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20. Sparks, M. I., and John, H. J.: The Clinical Use of Mixtures of Insulins, Ohio State M. J. **39**: 226, 1943.

portion of protamine zinc insulin and regular insulin in the same syringe can be attained when protamine zinc insulin and globin insulin with zinc are given at one sitting by separate injections about one hour before breakfast.

TABLE 4.—*Office Treatment of Patient 37, Woman Aged 70 with Diabetes for Five Years*

Date	Urinary Sugar, per Cent: P. M.	A. M.	Insulin Units: Protamine	Globin	Comment
Jan. 18	2.0	0.5	70	0	Very little sugar eliminated during the night (a. m. specimen) but much after meals (p. m. specimen) when protamine zinc insulin alone was used
Jan. 22	2.0	0.3	80	0	
Feb. 1	2.0	0.0	80	40	
8	2.0	0.0	80	50	Gradual addition of globin insulin with zinc results in:
15	2.0	0.0	80	60	
25	0.0	0.0	80	80	Good control of postprandial glycosuria, while protamine zinc insulin continues to regulate the glycosuria occurring at night
March 4	0.5	0.0	80	80	
23	0.0	0.0	80	80	
31	0.2	0.0	80	80	No hypoglycemic reactions throughout

Diet: protein 81, fat 89, carbohydrate 134.
Protamine zinc insulin controls glycosuria during the night fast, but an added dose of globin insulin with zinc is required to check the postprandial daytime glycosuria.
Accurate control of diabetes accomplished by means of separate injections of protamine zinc insulin and globin insulin with zinc. It is probable that a well adjusted mixture of protamine zinc insulin and regular insulin in one syringe could have been equally effective.

A diabetic woman aged 70 had a small amount of sugar in the urine in the morning urine (0.3 per cent) and a considerable quantity in the evening specimen (2.0 per cent) while she was receiving 80 units of protamine zinc insulin (table 4). If the protamine zinc

TABLE 5.—*Treatment of Patient 44, Youth Aged 18*

Date, 1942	Fasting Blood Sugar, Mg. per 100 Cc.	Insulin Units: Protamine	Globin
December 21	115	60	20
22	...	60	20
23	...	50	70
24	125	40	50
25	...	30	50
26	...	30	50
27	...	30	50
28	160	30	50

Diabetes of 4½ years' duration; patient hospitalized for plastic operation of hip.
Rise in fasting blood sugar with diminution of protamine zinc insulin, urine kept sugar free by compensatory increase of globin insulin with zinc. Diet constant. Urine practically sugar free throughout. No hypoglycemic reactions.
Reduction of protamine zinc insulin and replacement with globin insulin with zinc in preparation for a prolonged operation, so that during the period of fasting and nausea postoperatively only enough protamine zinc insulin remained active after discontinuance of globin insulin with zinc to allow for basic insulin requirements. Postoperative infusions of dextrose were controlled by supplementary administrations of globin insulin with zinc and regular insulin.
Flexible control of diabetes with protamine zinc insulin for regulation of the basic (fasting) insulin requirements and globin insulin with zinc for adjustment of the postprandial hyperglycemia. Mixtures of protamine zinc insulin and regular insulin could not have been as readily managed; three injections of regular insulin, one before each meal, would probably have been required to replace the single dose of globin insulin with zinc; protamine zinc insulin alone (which could control the diabetes) would have resulted in an excess of insulin on the day of fasting, that is, during and following the operation.

insulin was increased there was danger of hypoglycemia in the morning. In addition to protamine zinc insulin, increasing doses of globin insulin with zinc were resorted to and when, by dual injection, 80 units of protamine zinc insulin and 80 units of globin insulin with zinc were received by the patient she became sugar free in both evening and morning specimens and remained so for a long time. Protamine zinc insulin took care of the fasting, nocturnal hyperglycemia, and globin insulin with zinc, acting for twelve to fifteen hours, supplemented the protamine zinc insulin in setting aside the postprandial glycosuria.

The advantages of resorting to globin insulin with zinc instead of protamine zinc insulin at times, so as to render the control of the blood sugar more readily governable to meet rapidly shifting requirements, is illustrated in table 5. Patient 44 had been on a dose of 60 units of protamine zinc insulin, more or less, for the perfect adjustment of his diabetes. The regulation held good while he was receiving a constant diet and was at bed rest. A prolonged period of fasting and emergency infusions of dextrose were contemplated incidental to the carrying out of a plastic operation on his hip. It was obvious that if the large dose of protamine zinc insulin was continued this insulin would

TABLE 6.—*Dual Injections of Protamine Zinc Insulin and Globin Insulin with Zinc in the Management of Diabetes*

Case	Age	Sex	Insulin Units: Protamine	Globin	Control Diabetes	Comment
18	19	♀	20	10	Good	
43	40	♀	30	10	Variable	More satisfactory control with protamine-regular mixture
45	62	♀	20	10	Good	
3	78	♀	30	12	Good	
4	82	♀	18	14	Good	
28	48	♂	26	14	Good	
34	69	♂	18	16	Fair	Insists on very high carbohydrate diet
25	69	♀	40	18	Good	
22	53	♂	10	20	Good	
23	43	♂	40	24	Poor	Unwilling to try protamine-regular mixtures
27	71	♀	20	24	Good	
48	18	♂	44	24	Good	
21	67	♀	20	26	Good	
12	29	♀	40	28	Good	
10	64	♂	60	30	Good	
40	43	♂	40	34	Good	
36	50	♂	40	38	Good	
49	16	♀	44	38	Good	
24	16	♀	50	40	Good	Equally good with protamine-regular mixtures
44	18	♂	30	50	Good	
29	19	♀	30	80	Irregular	Equally poor with protamine-regular mixtures
37	70	♀	80	80	Good	

Patients whose diabetes was not successfully controlled by protamine zinc insulin or globin insulin with zinc alone.
Dual injections of protamine zinc insulin and globin insulin with zinc were given about forty-five minutes to one hour before breakfast. The success of this method of administering insulin is evident. It is possible that protamine zinc insulin and regular insulin mixtures would have achieved the same results.

in all probability cause hypoglycemia on the day, or days, of food abstinence, and also that it would not act rapidly enough to meet the hyperglycemia resulting from dextrose infusions. The prolonged, rigid effect of protamine zinc insulin that was advantageous under routine conditions was a distinct handicap when prompt adjustments to rapid fire variations in the insulin requirement were to be made.

Globin insulin with zinc, which acts for twelve hours more or less as a rule, was gradually substituted for the protamine zinc insulin. The rise of the fasting blood sugar from 115 to 160 in the course of eight days testifies to the fact that protamine zinc insulin in this case acted for more than twenty-four hours and globin insulin with zinc for a shorter period. When the insulin had been changed to 30 units of protamine zinc insulin and 50 of globin insulin with zinc it was thought that there was sufficient protamine zinc insulin to control the fasting tendency to hyperglycemia and that infusions of dextrose or ingested sugar and starches by

mouth could be compensated by the proper doses of short acting insulins, either regular or globin with zinc. All these ideas proved feasible and were successfully carried out. It becomes evident that the long commitments entailed by protamine zinc insulin are often welcome, while in the same patient, at other times, a shorter acting insulin, such as globin with zinc, is preferable.

It is gratifying to note how many diabetic patients (table 6) may be controlled with little or no difficulty by dual injections of protamine zinc insulin and globin insulin with zinc. It may very well be that these patients would have shown equally satisfactory effects with graduated mixtures of protamine zinc insulin and regular insulin. However, I have been under the impression that the separate administration of protamine zinc insulin and globin insulin with zinc yieided more predictable and uniform results than the blending of protamine zinc and regular insulin in one syringe.

SUMMARY AND CONCLUSIONS

From clinical trials I believe that globin insulin, as a twelve to fifteen hour insulin, is a distinct addition to the existing therapeutic means for the more accurate and efficient management of diabetes. It is particularly valuable first in regulating patients who have a rise of blood sugar after eating only, and not during the night while fasting, and, second, in the control of patients whose nocturnal, fasting blood sugar is normalized by a given dose of protamine zinc insulin and who require an additional daytime adjuvant to set aside postprandial glycosuria. While protamine zinc insulin alone or various combinations of protamine zinc insulin and regular insulin fulfil the purposes admirably, it is reassuring to have a second string to our bow. Without attempting intensive comparative studies of protamine zinc insulin and globin insulin with zinc I have found a few instances in which, because of certain idiosyncrasies, globin insulin with zinc was preferable to protamine zinc insulin, and it is reasonable to assume that in the long run the opposite will hold true.

There have been many objections to increasing the number of available insulins, principally for the reason that the management of diabetes would become too complicated for the grasp of the general practitioner and that specialists in diabetes would be necessary for the treatment of this disease. This may be true. An analogy may be found in the art of conducting anesthesia. At first no anesthetics were available, then two—ether and chloroform, usually dispensed by the junior intern, and now a bewildering array, managed, to every one's unquestioned satisfaction, by specialists. The handling of diabetes, without undue exaggeration, is fully as difficult as the guidance of anesthesia, and it is only reasonable that we might welcome even further additional varieties of insulin, provided they furnished help in perfecting the treatment of diabetes.

889 Lexington Avenue.

Sound Perception Through Bone Conduction.—That sound perception in persons with impaired hearing is aided by the age old method of the hollow hand behind the ear is undoubtedly based on the fact that bone acts as a sound conductor. This method may be improved by placing the index finger of the hand against the surface of the mastoid bone and the tip of the thumb against the tip of this bone. By using this modification, the conduction of sound is enhanced by bone contact.—Amberg, Emil: The Rainbow, June 1941.

MULTIPLE FAMILIAL CASES OF POLIOMYELITIS

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In 1943, 721 patients with poliomyelitis were admitted to the Contagious Disease Unit of the Los Angeles County General Hospital. Of these, 9.29 per cent (67 persons) came from families with multiple cases. There were 22 families with 2 cases each, 5 families with 3 cases and 2 families with 4 cases.

There were 38 secondary cases. Thirty-one (81.6 per cent) occurred within eight days or less of the initial case, and it is unlikely that any considerable number of the secondary cases were infected through exposure to the primary cases. Six (15.8 per cent) occurred between nine and fourteen days after the initial case and may or may not have been infected through exposure to the primary cases. One case (2.6 per cent) occurred after five weeks, which is a much longer period than is usually given as the upper limit for incubation.

TABLE 1.—*Interval Between Initial and Secondary Cases*

Days Interval After Initial Case	Number of Secondary Cases	Total Secondary Cases	Percentage of Total Secondary Cases
0	3		
1	2		
2	4		
3	7		
4	5		
5	1		
6	3		
7	2		
8	4	31	81.6%
9	1		
10	..		
11	2		
12	2		
13	..		
14	1	6	15.8%
5 weeks	1	1	2.6%
		38	100.0%

In the previous five year period (1938 through 1942) 403 cases were reported in the Los Angeles County Health Department area. Of these 5.4 per cent (22 cases) were in families with multiple cases, there being 11 families with 2 cases each.

This difference between 5.4 per cent and 9.29 per cent presents an interesting problem. Were more familial cases occurring in 1943, or were cases being diagnosed in 1943 that in previous years would not have been recognized? The probable answer depends on the fact that in 1943 patients were being diagnosed differently and also were being treated differently. This difference was mainly due to the application of the Kenny concept of the disease. Not only were cases diagnosed in 1943 by the finding of flaccid paralysis and other formerly acknowledged signs of poliomyelitis, but the mere presence of muscle spasm was taken into account.

From the Los Angeles County Health Department. This paper is submitted with the knowledge and consent of the Publications Committee of the Los Angeles County General Hospital. The material in it was collected and prepared in consultation with Dr. Paul Hamilton, chief of staff of the Acute Communicable Disease Unit of the General Hospital. The table of gradations of muscle spasm was contributed by Dr. Wayne McFarland. Miss Dorothy Graves, physical therapist at the General Hospital, furnished a large part of the statistical and case history data. Dr. Roy Gilbert, assistant Los Angeles County health officer, furnished the data regarding multiple familial cases of poliomyelitis in Los Angeles County in former years.

By muscle spasm is meant "a group of symptoms including fibrillary twitchings, hyperirritability of the muscle to stretching and a more or less toxic state of contraction of the muscle fibers which frequently cannot be overcome even by great force."[1] The muscles most frequently seen in spasm were the posterior neck muscles, the erector spinae group and the hamstrings. Table 2 explains the basis of classifying the spasms of these muscles.

As can be readily seen, severe degrees of active spasm are readily diagnosed. Mild degrees are often difficult to perceive and may be missed. A good knowledge of muscle anatomy and of the various normal ranges of motion of the back and extremities at different ages is very helpful. But the type of spasm characteristic of poliomyelitis may continue for weeks or months if untreated. This helps considerably in differentiating mild degrees of true poliomyelitis spasm from the muscle soreness and stiffness of a temporary nature which may accompany influenza, pneumonia, typhoid and other illnesses.

To determine the difference that muscle spasm as a diagnostic criterion made in the number of cases diagnosed, the 67 multiple familial cases were reviewed as carefully as possible in the light of diagnostic criteria used in prior years and divided into four groups. Studied in this way, it was found that there were 42 cases that would have been diagnosed in previous years, 8 that probably would have been, 12 that would not have been recognized and 5 that probably would not have been.

Similarly, the 29 families were divided into four groups. There were 12 families in which multiple cases would have been diagnosed in previous years, 7 families in which multiple cases probably would have been diagnosed, 6 families in which multiple incidence would not have been diagnosed and 4 families in which multiple incidence probably would not have been diagnosed. In this classification an instance of multiple familial incidence was taken to be where 2 or more cases in a family would have been readily recognized. A probable instance of multiple familial incidence was taken to be where 1 case would have been diagnosed and other cases probably would have been. An absence of multiple familial incidence was taken to be where only 1 member of a family would have been diagnosed. A probable absence of multiple family incidence was taken to be where 1 member would have been diagnosed and other cases probably would not have been recognized.

Of great value in confirming the diagnosis of poliomyelitis, whether the tentative diagnosis rested on muscle spasm alone or on other findings as well, were spinal fluid examinations. In all, spinal taps were done on 66 of the 67 patients. The 1 missed went directly into the respirator on admission and there was no question about the diagnosis. The spinal fluids were valueless in 2 cases because of bloody taps. Of the remaining 64, 52 (81.2 per cent) had definitely positive spinal fluids. A positive spinal fluid was taken to be one that had more than 10 cells per cubic millimeter, or a total protein above 65 mg. per hundred cubic centimeters of spinal fluid. Five patients (7.8 per cent) had questionably positive spinal fluids. A questionably positive spinal fluid was taken to be one having a total protein between 60 and 65 mg. By the method used, 60 mg. was considered the upper limit of normal. Seven cases (10.9 per cent) were negative.

Of the 67 patients, 21 had only 2 + spasm. Of these 18 (85.7 per cent) had positive spinal fluids. Three were negative.

Of the 67 patients, 15 had only 1 + spasm. Of these 7 (46.6 per cent) had positive spinal fluids. Four (26.6 per cent) had questionably positive spinal fluids. Four (26.6 per cent) had negative spinal fluids.

Of the 6 families in which multiple cases would not have been diagnosed in previous years, 3 instances of familial incidence were definitely confirmed by positive spinal fluid findings in both cases in each family. One instance was equivocally confirmed by a questionably positive spinal fluid in 1 member of the family and a positive spinal fluid in the other. Two instances were not confirmed by spinal fluid findings.

TABLE 2.—*Gradations of Spasm*

Degree of Severity		Physical Findings
Posterior Neck Muscles (Patient Lying Supine)		
Very severe	4+	Neck retracted or in extreme extension
Severe	3+	Patient is unable to raise head from bed
Moderate	2+	Head can be flexed 45 degrees
Slight	1+	Head can be flexed 90 degrees
None	0	Head can be flexed on chest
Erector Spinae Muscles (Patient Lying Supine with Legs Straight)		
	4+	Back has lordosis, opisthotonos
	3+	Patient is unable to raise shoulders from bed
	2+	Back can be flexed 45 degrees; patient assumes tripod position
	1+	Back can be flexed 90 degrees
	0	Back can be flexed 135 degrees in adult and to knees if child
Erector Spinae Muscles (Patient Sitting with Legs Hanging Over Side of the Bed)		
	4+	Patient is unable to sit up; lordosis
	3+	Back can be flexed 45 degrees; patient assumes tripod position
	2+	Back can be flexed 90 degrees
	1+	Back can be flexed 135 degrees
	0	Back can be flexed until forehead touches knees
Hamstring Muscles (Patient Lying Supine with Legs Straight)		
	4+	Knees are flexed; patient is unable to straighten without pain
	3+	Unable to raise legs from bed
	2+	Straight leg raising 45 degrees
	1+	Straight leg raising 75 degrees (may be normal in young adults)
	0	Straight leg raising 90 degrees or beyond
Hamstring Muscles (Kernig Position, Patient Lying Supine with Thigh at 90 Degrees and Attempting to Extend Leg on the Thigh)		
	4+	Knees are flexed; patient is unable to straighten without pain
	3+	Unable to raise legs from bed
	2+	Straight leg raising 45 degrees
	1+	Straight leg raising 75 degrees (may be normal in young adults)
	0	Straight leg raising 90 degrees or beyond
	4+	Same as 4+ in straight leg raising
	3+	Kernig 90 degrees (leg extended to 90 degrees on thigh)
	2+	Kernig 135 degrees
	1+	Kernig 165 degrees (may be normal in young adults)
	0	Kernig 180 degrees

TABLE 3.—*Diagnosis by Criteria of Prior Years*

Sixty-Seven Multiple Familial Cases Diagnosed in 1943

By Diagnostic Criteria of Prior Years (Before Kenny)	No. of Cases
1. Would have been diagnosed	42
2. Probably would have been diagnosed	8
3. Would have been unrecognized	12
4. Probably would have been unrecognized	5

Twenty-Nine Families with Multiple Cases Diagnosed in 1943

By Diagnostic Criteria of Prior Years	No. of Families
1. Would have been diagnosed	12
2. Probably would have been diagnosed	7
3. Would have been unrecognized	6
4. Probably would have been unrecognized	4

1. Cole, W. H.; Pohle, J. S., and Knapp, M. E.: Kenny Method of Treatment for Infantile Paralysis, Publication 40, National Foundation for Infantile Paralysis, Inc., 1942.

Of the 4 families in which multiple cases probably would not have been diagnosed in previous years, 1 instance was definitely confirmed by positive spinal fluid findings in both members of the family. Two instances were equivocally confirmed by a positive spinal fluid in 1 member of each family and a questionably positive spinal fluid in another member of each family. In 1 equivocally confirmed instance the questionably positive spinal fluid occurred in a member with very severe flaccid paralysis. The remaining instance was not confirmed by the spinal fluid findings. It might be said that the cases unconfirmed by spinal fluid findings or equivocally confirmed by questionably positive spinal fluid findings and without other suggestive findings aside from persistent muscle spasm were not cases of poliomyelitis. This may be true, and until an easy, reliable laboratory aid is discovered to establish the diagnosis no one will be able to prove these cases one way or the other. These cases were diagnosed poliomyelitis because of a strongly suggestive history and because the muscle spasm persisted for weeks after the temperature had become normal.

To determine the reason why the mildly involved were being sent to the hospital was an interesting problem. Ordinarily these cases would have gone unrecognized. The answer became apparent when the severity of the illness in the first member of each family was studied. In 25 of the 29 families (86.2 per cent) the first case showed symptoms that would have been readily diagnosed in previous years. In 1 of the remaining 4 families the first case was such that it probably would have been diagnosed in previous years. In another of the remaining families, all 4 cases in the family were admitted when the third member to come down developed symptoms of flaccid paralysis. In only 2 families (of 2 siblings each) were the symptoms so mild that the cases probably would have been missed in previous years, and the existence of an epidemic in the community doubtless had its influence in arousing a suspicion of the presence of the disease. It is apparent that the discovery of a severe case in the family was the usual cue for the study and diagnosis of subsequent milder ones.

COMMENT

The Kenny concept of poliomyelitis has given us a new approach to the diagnosis as well as to the treatment of the disease. With it we are in a position to diagnose cases on the basis of very mild physical findings. The finding of 29 families with multiple cases is significant, not because a much larger proportion of such cases than usual actually occurred but because a means was at hand for diagnosing mild cases that allowed multiple cases within families to be recognized more easily. Even this year undoubtedly many cases were missed, since the cue for diagnosing a great majority of the mild cases was the presence of a severe case in the family. In families with 1 or more cases of poliomyelitis all of which were mild, medical counsel was probably seldom called, and the true nature of the illness was not even suspected.

The lack of recognition of these mild cases may account in some measure for the difference between the large number of adults who have protective substances in their blood against poliomyelitis virus and the comparatively small number who have a history of having had the disease. Unrecognized, and therefore untreated, one-sided spasm may account for the frequent orthopedic problems of unexplained scoliosis and leg shortening.

SUMMARY

1. Seven hundred and twenty-one patients with poliomyelitis were admitted to the Contagious Disease Unit of the Los Angeles County Hospital in 1943. Of this number 9.29 per cent were due to multiple cases in families.

2. There were 22 families with 2 cases each, 5 families with 3 cases each and 2 families with 4 cases each, for a total of 67 cases.

3. The apparently increased incidence of multiple familial cases was probably in great part due to the adoption of the Kenny concept of the disease, which gave a new criterion for diagnosis, namely muscle spasm. By this means mild cases were diagnosed that in previous years would not have been recognized.

4. In a very large majority of instances attention was attracted to the mild cases by the presence of a severe case in the family.

5. Definitely positive spinal fluid findings confirmed the diagnosis in 81.2 per cent of the cases, and questionably positive findings in 7.8 per cent.

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Clinical Notes, Suggestions and New Instruments

A CASE OF KALA-AZAR

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Kala-azar is an infectious disease characterized by irregular, intermittent and long-continued fever, leukopenia, progressive anemia, enlargement of the spleen and liver, gradual loss of strength and emaciation. It is caused by the protozoon Leishmania donovani, and these organisms are found in the reticuloendothelial cells of the spleen, liver, bone marrow and other tissues. In heavily infected patients they may be found in the mononuclear leukocytes of the peripheral blood.

Leishmania donovani grows on N. N. N. culture medium kept at 22 C., and in culture flagellate forms are present. These forms have been found in the midgut and pharynx of certain species of the sandfly Phlebotomus, which is apparently the insect vector involved.

Kala-azar is widespread in the Eastern Hemisphere. The most heavily infected areas are in eastern India, in the provinces of Assam, Madras, Bengal and Bihar, and in China north of the Yangtse River. It is also found in most countries bordering on the Mediterranean, especially in Italy and Greece, in western Africa, in the Sudan and in Abyssinia, Iraq, southeastern Russia and Russian Turkestan. Recently cases have been found in the Western Hemisphere in Brazil, Paraguay and Argentina.

The patient, a 23 year old Indian seaman, was admitted to the United States Marine Hospital at Ellis Island, N. Y., on Aug. 16, 1943 complaining of fever and weakness. He had been in the province of Assam from February to October 1942 and had sailed from Calcutta in January 1943 in good health. Two weeks later, at a port in East Africa, he became ill with fever but was able to continue working. The fever continued, and a few days later, on arriving at Durban, South Africa, he was sent to a hospital, where he was treated for malaria. After twelve days' sickness he was discharged feeling much improved. About eight weeks later, exacerbation of fever recurred which lasted for one week. Approximately six weeks before he entered this hospital the fever returned and was present every afternoon. His weakness gradually increased and was severe at the time of his admission to this hospital.

Dr. Henry E. Meleney, professor of preventive medicine, and Dr. Harry Most, assistant professor of preventive medicine, New York University College of Medicine, made suggestions for treatment in this case.

The patient was moderately emaciated and appeared to be chronically ill. His height was 62¼ inches (158 cm.) and his weight was 97 pounds (44 Kg.). The tonsils were enlarged and covered with a yellowish exudate, and the lymph nodes of the neck were slightly enlarged. The abdomen was flat, and the lower border of the spleen extended 10 cm. below the costal margin. The edge of the liver was palpated 4 cm. below the costal margin, and it was slightly tender. The temperature was 37.5 C. (99.5 F.); urinalysis and a roentgenogram of the chest revealed normal conditions. There were 3,970,000 red blood cells, a hemoglobin content (Sahli) of 75 per cent and 3,700 white blood cells, of which 55 per cent were polymorphonuclear neutrophils, 35 per cent lymphocytes, 6 per cent mononuclears, 3 per cent transitional forms and 1 per cent eosinophils. Repeated blood smears were examined for malarial parasites, but none were found. Stool examinations revealed ova of Ascaris lumbricoides and ova of Trichuris trichiura. The Wassermann reaction was anticomplementary on three occasions and the Kahn reaction negative.

During the patient's first three days in the hospital his temperature varied between 0.2 and 0.4 degree above normal, but on August 19 it suddenly rose to 38.6 C. (101.5 F.). It returned to normal the following day and remained normal until September 8, when it suddenly rose to 38 C. (99.4 F.); on that date the diagnosis of kala-azar was established by splenic puncture.

Results of three presumptive globulin tests for kala-azar were positive. The first test, the water precipitation test, was performed by adding 0.02 cc. of whole blood (by means of a Sahli hemoglobin pipet) to 0.6 cc. of distilled water. A flocculent precipitate settled within fifteen minutes. The second test, the formol-gel or aldehyde test of Napier, was done by adding 1 drop of solution of formaldehyde diluted 3: 10 to 1 cc. of serum. Within ten minutes the serum became solid and in appearance resembled the white of a hard-boiled egg. This test is considered as diagnostic of kala-azar if the serum solidifies and

Fig. 1.—Smear from splenic puncture, showing Leishmania donovani extracellularly.

becomes white within one hour. The third test, the neostibosan test, was done by adding 3 or 4 drops of serum to 2 cc. of a 4 per cent aqueous solution of neostibosan. On shaking, turbidity occurred, and within one hour a white precipitate covered the bottom of the tube, leaving the upper part of the solution transparent. The appearance of more or less pronounced turbidity on shaking and the separation of a precipitate within twenty-four hours as a white layer on the bottom of the tube indicate a positive specific reaction in 95 per cent of cases.

Aspiration of sternal bone marrow was done on August 24 and again on September 1, but Leishmania donovani was not

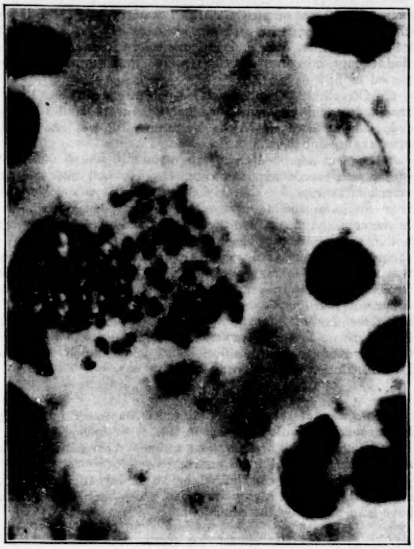


Fig. 2.—Smear from splenic puncture showing intracellular Leishmania donovani

found. During this time the patient's intestinal worm infections were treated with 15 grains (1 Gm.) of hexylresorcinol. Repeated examinations of the stool for ova failed to reveal their presence. On September 8 splenic puncture demonstrated numerous Leishmania donovani organisms in all smears.

One of the most efficacious drugs for the treatment of kala-azar is neostibosan, a pentavalent antimony compound.[1] Treatment with neostibosan was started on September 8, and the patient received 0.1 Gm. intravenously, the drug being dissolved in 3 cc. of sterile distilled water and given very slowly. On the following day he received 0.2 Gm. intravenously in 6 cc. of distilled water, and on September 10 and again on September 11 0.3 Gm. was given in 9 cc. of sterile distilled water. Treatment was omitted inadvertently on September 12, but on September 13 0.3 Gm. was given intravenously in 9 cc. of sterile distilled water. The temperature varied daily between 36 and 38.4 C. (96.8 and 101.1 F.) from September 8 to 13. On September 13 the patient suddenly began to have abdominal pain and bloody diarrhea. He was given 500 cc. of plasma, after which urticaria appeared and he had a chill that lasted for approximately fifteen minutes. Early the next day the abdominal pain became more severe, was colicky and was localized in the upper part of the abdomen. On September 14 he had twelve bloody, watery stools, and the following day his temperature rose to 38.6 C. (101.5 F.). He was dehydrated, was unable to eat, complained continually of the severe abdominal pain and was acutely ill. He was treated with sedation and Kaopectate [2] and given parenterally 2,000 cc. of 5 per cent dextrose in isotonic solution of sodium chloride and 500 cc. of whole citrated blood. The diarrhea gradually subsided, and after two days the temperature returned to normal. The stools

1. A brand of ethylstilbamine-Winthrop.
2. A preparation made by the Upjohn Company.

were examined repeatedly for Endamoeba histolytica and cultured for dysentery bacilli, but none were found. The white blood cell count during this period of acute illness ranged between 4,000 and 5,000 cells with a normal differential count; on September 17 there were 3,800,000 erythrocytes with 74 per cent hemoglobin (Sahli). On September 22, 24 and 27 the patient was given intravenously 0.05 Gm. of neostibosan dissolved in 10 cc. of sterile distilled water. Every third day thereafter he received neostibosan intravenously diluted in 10 cc. of distilled water. The dose was gradually increased to 0.3 Gm. and twenty injections (4 Gm.) were administered during a period of fifty days.

On Oct. 21, 1943 another splenic puncture was done. Leishmania donovani was not found on the smears of the splenic pulp, and cultures on N. N. N. medium showed no growth after twenty-one days.

The patient improved rapidly and gained 10 pounds (4.5 Kg.) during the course of treatment. He felt well and had no complaints except for poor vision in his left eye and bleeding from the gums and the nose. No bleeding points were found in the nose and mouth, and the bleeding and clotting time were within normal limits. The loss of vision in the left eye was caused by an extensive retinitis pigmentosa, which probably was not related to his infection. The erythrocyte count was 5,060,000, with 89 per cent hemoglobin (Sahli). The leukocyte count was 5,800, with a normal differential smear.

On the day of discharge, October 20, the spleen and the liver were no longer palpable. The formol-gel and the neostibosan reactions were positive. The sedimentation rate was 21 mm. (Cutler method) in an hour.[3]

SUMMARY

1. In a case of kala-azar the diagnosis was made by finding Leishmania donovani organisms in smears of splenic pulp.

2. Treatment with a pentavalent antimony compound brought about prompt clinical improvement.

3. Treatment was complicated by an exacerbation of fever, abdominal pain and bloody diarrhea, which may or may not have been caused by the administration of neostibosan.

A SMALL EFFICIENT HOOD FOR OXYGEN THERAPY

CHRISTIAN J. LAMBERTSEN, M.D., AND LINCOLN GODFREY, M.D.
PHILADELPHIA

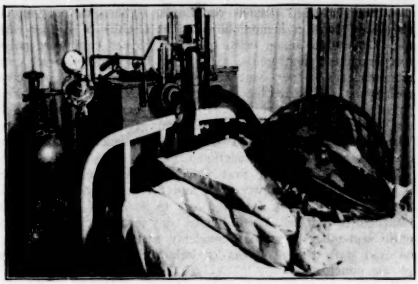
It is our purpose in this report to describe a modification of the oxygen tent principle which will obviate many of the disadvantages of the large oxygen tent, namely low maximum oxygen concentrations, inaccessibility of the patient, difficulty of application, and psychic phenomena such as claustrophobia and feeling of suffocation. Much remains to be done before the physiologic aspects of oxygen therapy are completely established. Meanwhile, progress in therapy with oxygen is hindered by the too complete reliance by the clinician on equipment whose chief merit is long usage.

It appears that a small hood or helmet enclosing the head alone might overcome several of the disadvantages inherent in the large oxygen tent. The principle of such a hood is not new. Similar means have been used previously for oxygen administration.[1] However, a review of the available literature revealed nothing to compare closely with the equipment to be described.

This oxygen therapy unit comprises a small, completely transparent hood enclosing the head and neck, designed to be removably attached by outlet and inlet tubes to the air conditioning machine of the standard oxygen tent and to be snugly sealed about the neck of a patient by means of an attached skirt.

The shape of the oxygen hood is that of an eggshell bisected longitudinally. It is constructed of a tough, colorless plastic and is therefore completely transparent. The smooth dome of the hood has only minor refractive errors, making it almost invisible to a patient within it. The interior is sufficiently large to permit free motion of the head in all directions.

To the rim of the hood is attached a "skirt" of thin "pliofilm" or oiled silk. This may be easily replaced when it becomes worn. Obviously this skirt is merely a snugly fitting drape which prevents gross leakage of gas about the neck.



Small efficient hood for oxygen therapy.

Two long corrugated rubber inlet and outlet tubes connect the hood with the air conditioning unit. By means of a small baffle plate the air current into the hood is deflected upward and carried forward along the curve of the dome.

Circulation, cooling, humidification, carbon dioxide absorption and addition of oxygen to the respired gases is accomplished by the use of the air conditioning unit of a standard oxygen tent. This unit has been changed in only one respect. An additional rheostat has been added to the circuit to slow the motor down to any desired speed. The adaptability of the hood to this common type of equipment obviates the necessity of specialized equipment and is of considerable economic importance.

The air exhaled by the patient is drawn out the back of the hood via the flexible outlet tube into the air conditioning unit, where it is cooled and humidified, carbon dioxide is absorbed and oxygen is added. From the cooling chamber it is blown through the corrugated inlet tube into the hood, where it follows the dome of the hood anteriorly.

The technic for use of the oxygen therapy hood is extremely simple. With oxygen flowing at the desired rate and the circulating fan turned on, the hood is placed over the head of the patient in such a way that it rests on the pillow posteriorly and on the chest anteriorly. The patient therefore lies with his head on a pillow and is in contact with the hood at only one point, the chest.

The pliofilm skirt is made with an overlapping split posteriorly. The free edges thus formed are crossed behind the patient's neck, drawn snugly on each side and crossed again at the front of the neck. The anterior portion of the skirt is then folded once under the hood, completing the application. This provides a comfortable, adequate seal which can be immediately undone, even by the patient. The application is identical for patients in the Fowler position. It is unnecessary to point out that proper application of any device for oxygen therapy contributes greatly to its efficiency.

Oxygen Concentration

Liters of Oxygen per Minute	Average Oxygen Concentration
4	50-55%
6	60-70%
8	75-80%
10	80-88%

In using this hood, the general considerations of oxygen flow and air circulation are decisions to be made by the clinician in his judgment of the case. Thus, in certain cases it may be desirable to decrease the air temperature within the

3. Since this paper was written we have received word from a New Zealand hospital, where the patient was examined, that a formol-gel test was negative, and the blood sedimentation rate by Wintrobe's method was 10 mm. per hundred cubic centimeters in one hour.

From the Medical Clinic of the Hospital of the University of Pennsylvania.

1. Benedict, F. G.: New England J. Med. **203**: 150, 1930. Fine, J.; Hanks, B. M.; Sears, J. B., and Hermanson, L.: Ann. Surg. **103**: 375, 1936. Barach, A. L.: New York State J. Med. **37**: 1095, 1937.

hood by speeding the circulation of gas through the ice chest. It must be mentioned here that with some machines increasing the force of circulation of gases in the system has been shown to lower the maximum oxygen concentration reached with a given oxygen flow. Therefore, to attain maximum concentration, the speed of the motor should be slowed so that the temperature within the hood is just cool enough for comfort.

In the accompanying table are listed the concentrations reached within the oxygen hood at various rates of oxygen flow.

This small oxygen hood has been used in the University Hospital for four months. Over 50 patients have been treated for periods of time ranging from several hours to ten days. They represent a cross section of the various pathologic conditions requiring oxygen therapy seen in a general hospital. Pneumonia, acute coronary occlusion and congestive heart failure or a combination of these made up the largest group of patients. Postoperative patients, shock, asthma and a number of other conditions were also treated in this manner. The hood is tolerated very well by almost all the patients. Only 2 could not tolerate it, and 1 of these was a patient with a violent cardiac psychosis. Many of the patients have requested that oxygen therapy be reinstituted after it has been discontinued by the ward staff.

This small oxygen hood has advantages other than high oxygen concentration and its acceptability to the patient. It is safe. Mistakes in its application or in the oxygen supply will not harm the patient. One of us (L. G.) has remained in the tent for one hour with the motor on without any oxygen being supplied to the air conditioning unit; no symptoms or signs of anoxia developed. One patient remained in the tent for three hours without oxygen being supplied; no harmful effects could be detected.

The hood is easily applied and taken care of by the nursing staff, and its operation requires considerably less care than is needed by a large tent. It has made the nursing of acutely ill patients who need oxygen a great deal easier. Such procedures as intravenous injections of fluids and medications, enemas, bed baths, bedside chest films and electrocardiography can be done without removing the patient from the hood. The patient's chest and abdomen are accessible for examination, and his head and face are easily inspected. The visibility from within the hood is excellent and without any distortion. Patients who are not acutely ill can read or write while in the tent, and none have developed symptoms of eyestrain.

Three factors contribute largely to the patient's feeling of comfort and safety: The whole tent is very light and no weight rests on the patient's head, the visibility is excellent and the tent can be removed by the patient at a moment's notice. These have overcome one of the theoretical objections to such an apparatus, the belief that many would develop claustrophobia in such a confined space. This has not been true, for only 1 patient has complained of this reaction.

There are certain limitations which must be realized. Any of the present types of apparatus designed for the therapeutic administration of oxygen suffer in efficiency if they are improperly or poorly handled, and, although in clinical use the small hood gives uniformly good results with a minimum of nursing care and has obviated the need of special technicians or special duty nurses, its efficiency will suffer with poor care.

Patients who are vomiting frequently and those who must expectorate continually are not easily handled in the hood. The latter objection does not hold true for cases in which expectoration and cough can be minimized by sedation, as in lobar pneumonia.

If the motor of the air conditioning unit should be turned off while the patient is in the hood, carbon dioxide rapidly accumulates. Within five minutes the patient will become quite uncomfortable. This has little danger for the conscious patient; however, if this should occur with a comatose patient who is unable to get out of the hood, serious consequences might result. Fortunately, this is a complication which could happen only with grossly inefficient handling of the equipment.

In comparing this small hood with the large oxygen tents in use today, the greatest single advantage for the former is the fact that oxygen concentrations can be maintained that are far above the theoretical maximum concentrations obtained in the large tents. It is generally supposed that, at a flow of from 6 to 8 liters per minute, concentrations ranging from 40 to 60 per cent are obtained in the large oxygen tents. However, it has been our experience and the experience of others[2] that such concentrations are seen only when special duty nursing care is given the patient. In fact, in this hospital, with ward nursing care, a maximum concentration of 40 per cent is seldom seen unless the oxygen flow is increased to from 12 to 16 liters per minute. The figures quoted for the small hood represent concentrations obtained when the hood was being operated by the ward nursing staff, and they do not represent controlled experimental runs on quiet, cooperative patients.

In comparison with oxygen administration by nasal catheter, the hood has the advantage of being far more comfortable and acceptable to the patient, especially if therapy must be prolonged more than a few hours, and higher oxygen concentrations can be administered by means of the hood. A well placed nasal catheter is capable of providing alveolar concentrations of about 60 per cent oxygen[3] (comparable to inspired air oxygen concentrations of approximately 65 to 68 per cent) at a flow of 6 to 8 liters oxygen per minute. However, the effectiveness is dependent largely on the proper insertion of the catheter.

The hood has certain advantages over the face masks in popular use at this time. It is more acceptable to the patient and more comfortable if used for periods of twenty-four hours or longer. Furthermore, in the majority of conditions which call for oxygen therapy, concentrations of 70 to 80 per cent are entirely adequate for clinical purposes, barring acute surgical, anesthetic and traumatic emergencies where 100 per cent oxygen is of great value.

SUMMARY

1. A small oxygen hood, fitting about the head and neck of the patient, can be adapted by means of tubing to the air conditioning units used by most of the large oxygen tents.

2. Its operation and principle are similar to those of the large oxygen tents.

3. In clinical use, oxygen concentrations of from 60 to 88 per cent can be reached and maintained at oxygen flows of from 6 to 10 liters per minute.

4. The hood is well tolerated by the majority of patients.

5. Advantages over the large tent include higher oxygen concentration, greater accessibility of the patient for therapeutic measures and examination, and greater ease of nursing care.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

SULFADIAZINE (See New and Nonofficial Remedies, 1943, p. 169).

The following dosage forms have been accepted:

THE WM. S. MERRELL COMPANY, Cincinnati

Tablets Sulfadiazine: 0.5 Gm.

THE SMITH-DORSEY CO., Lincoln, Neb.

Tablets Sulfadiazine: 0.1 Gm. and 0.5 Gm.

WINTHROP CHEMICAL CO., INC., New York

Tablets Sulfadiazine: 0.5 Gm.

SULFADIAZINE SODIUM (See New and Nonofficial Remedies, 1943, p. 188).

The following dosage form has been accepted:

LEDERLE LABORATORIES, Pearl River, N. Y.

Ampuls Solution Sodium Sulfadiazine 25% W/V: 10 cc. Each cubic centimeter contains sodium sulfadiazine 2.5 Gm. in distilled water.

2. Rosenblüth, M. B., and Block, M.: Oxygen Therapy Without Soda Lime, J. A. M. A. **98**: 396 (Jan. 30) 1932.
3. Rovenstine, E. A.; Taylor, I. B., and Lemmer, K. E.: Anesth. & Analg. **15**: 10, 1936.

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SATURDAY, JUNE 17, 1944

A TABLET EMERGENCY RATION FOR LIFEBOATS AND RAFTS

A man who ingests ample water but not food can, according to Ivy,[1] survive twenty to thirty days, provided he is not subjected to physical strain to which fasting renders him unduly susceptible. The maximum time of survival of a person completely deprived of water rarely exceeds ten to fourteen days, even under the most favorable circumstances. The maximum recorded period of survival at sea without water is eleven days. When the daily intake of water is limited to less than 500 cc., the ingestion of a relatively small amount of carbohydrate and fat will maintain an otherwise starving person in better condition than if this food was replaced with an equivalent weight of water. Under certain conditions of shipwreck the person is likely to die in a short time from exposure to cold. In such cases food might be of more importance than water in prolonging life.

The emergency ration to meet the requirements, according to Ivy and his associates, should be concentrated, furnishing a maximum number of calories in the allotted space. It should not cause nausea or vomiting and should consist of a food substance which can be swallowed with a minimum of difficulty when the mouth is dry and which will not cause subsequent accentuation of thirst. Assimilation of the ration should be accompanied by production of a maximum volume of water of oxidization. Excretion of its metabolic products, nitrogen and inorganic salts, should entail loss of a minimum volume of urine. The components of the ration should lend themselves to easy and equal distribution to the individual survivors on a lifeboat or raft. The constituents should remain unaffected by storage for long periods at high temperatures frequently encountered in aircraft parked in the sun or in lifeboats stowed on a ship's boat deck.

A reevaluation of the problem of equipping emergency kits became necessary when, in the spring of 1943, two satisfactory methods of rendering sea water potable by chemical demineralization were developed. Either of these methods increased by at least four to six times the volume of water potentially available in a given space. The authors have developed a "tablet emergency ration" whose three food components are sucrose-citric acid, sucrose-lipid-citric acid and sucrose-malted milk tablets. The sucrose-lipid-citric acid tablets contain slightly over 20 per cent of fat. The inclusion of fat in a ration is desirable because fat is the most concentrated source of calories available and, when oxidized in the body, produces more water than any other food. The addition of fat to sugar renders the former less nauseating. The citric acid increases the flow of saliva and thus facilitates dissolving of the tablet in the dry mouth.

The tablet emergency ration was the only food furnished to eighteen volunteers who spent four days on pneumatic life rafts under tropical conditions in the Gulf of Mexico in July 1943. The subjects received up to 340 calories of the ration, or 75 mg. daily, during the four days. The relative amounts of each item issued were, by weight, four parts of sucrose-citric acid tablets, two parts of sucrose-lipid-citric acid tablets and one part of sucrose-malted milk tablets. Although the daily fluid intake was less than 500 cc., evaporative water loss was at a minimum and thirst was not a general complaint. All three types of tablets, particularly the sucrose-lipid-citric acid tablet, were received with general approval. Hunger was satisfied.

Two factors were operating which commonly reduce the appetite of survivors to a minimum, a tendency to seasickness and incipient dehydration. Butler[2] observed that a daily intake of 150 Gm. of his butterscotch ration seemed a satisfactory allowance for these conditions. In view of his results and those of the Naval Medical Research Institute at the trials in the Gulf of Mexico, the recommended daily allowance has been set at 150 Gm. per man, supplying about 690 calories. On the basis of the emergency craft's rated capacity, 75 to 150 Gm. of the ration should be stowed for each man for each day of the maximum number of days expected to pass before rescue.

The advantages of this tablet emergency ration are that it is compact, contains only small amounts of sodium chloride and protein and can be ingested with a minimum of difficulty when the mouth is dry. The tablet is recommended for use on life rafts and lifeboats and in other situations where it is desired that a concentrated ration be available for use over a limited number of days.

1. Ivy, A. C.; Futcher, Palmer H.; Consolazio, W. V.; Pace, Nello, and Gerrard, Elizabeth J.: A Tablet Emergency Ration for Life-Boats and Rafts, U. S. Nav. M. Bull. **42**: 841 (April) 1944.

2. Butler, A. M., quoted by Ivy.[1]

THE RH BLOOD TYPES

As Landsteiner and Wiener [1] have shown, serums for testing for the Rh blood factor can be produced at will by immunizing guinea pigs with the blood of rhesus monkeys. The guinea pig serums all give parallel reactions and agglutinate the bloods of about 85 per cent of all white persons. Anti-Rh serums can also be obtained from human beings who have had hemolytic transfusion reactions [2] or given birth to infants with erythroblastosis fetalis.[3] While the reactions of the human serums closely resemble those of the guinea pig antirhesus serums, the parallelism is not always perfect, and recent work has revealed that there are three distinct varieties of human anti-Rh agglutinins. One variety of human antiserum, which gives identical reactions with the antirhesus serums, is designated standard anti-Rh or simply anti-Rh_0. The second variety agglutinates the bloods of only 70 per cent of all white persons and is designated anti-Rh_1.[4] The third variety gives only about 30 per cent positive reactions and is designated anti-Rh_2.[5] The situation is further complicated by the existence of two additional varieties of human anti-Rh serums containing more than one sort of anti-Rh agglutinin; one serum contains the two agglutinins anti-Rh_0 and anti-Rh_1, gives about 87 per cent positive reactions and is designated simply anti-Rh′, while the other contains agglutinins anti-Rh_0 and anti-Rh_2 and is briefly designated anti-Rh″.

These facts have been summarized in a report by Wiener,[6] who points out that with the aid of the three agglutinins anti-Rh_0, anti-Rh_1 and anti-Rh_2 not merely a single Rh factor but instead five sorts of Rh agglutinogens can be identified. According to a theory proposed by him, these agglutinogens and the Rh negative type are inherited by means of a series of six allelic genes named *Rh_1*, *Rh_2*, *Rh′*, *Rh″*, *Rh_0*, and *rh* respectively, after the agglutinogens which they determine. Under the theory, eight Rh blood types should exist, and of these all but the rarest type (Rh′Rh″, with a calculated frequency of only 1 in 10,000) have actually been encountered. Among white persons in New York City the types have the approximate distribution 13 per cent Rh negative, 50 per cent Rh_1, 15.5 per cent Rh_2, 17 per cent Rh_1Rh_2, 2.5 per cent Rh_0, 1.5 per cent Rh′ and 0.5 per cent Rh″. By way of contrast, Wiener, Sonn and Belkin [7] found that among Chinese there are only about 1 per cent Rh negative individuals, while among Negroes the Rh_0 type attains as high a frequency as 40 per cent.

In a recent paper these authors [8] have subjected the theory of six allelic genes to a critical test by investigations on a series of 97 families with 275 children. Only a single apparent exception to the laws of heredity under the theory was found, and this involved a husband of type N whose supposed child belonged to type M, so that the assumption seems justified that the child in question is illegitimate. In view of these family data, as well as the results obtained in the study of mother-child combinations and the statistical analysis of data on the distribution of the Rh blood types, the theory of six allelic genes appears to be firmly established. Therefore the medicolegal application of the Rh blood types in cases of disputed parentage is justified, provided suitable potent reagents are available. The use of the Rh tests in such cases, with the A-B-O groups and M-N types, raises the chances of excluding parentage from about 33 per cent to almost 45 per cent. In the paper a case is described in which the older tests failed to exclude a man, while the Rh tests proved that he was not the father of the child in question. A second medicolegal application of the Rh tests is for the individual identification of blood stains. Since the blood groups, subgroups and M-N types distinguish 18 sorts of human blood, the Rh types multiply this seven times, so that now as many as 126 varieties of human blood can be readily be differentiated. While this still does not approach the vast number of varieties of cattle blood that have been identified,[9] it is a step in the right direction.

In clinical medicine the Rh types serve to explain a certain number of the hitherto puzzling instances of hemolytic transfusion reactions in Rh positive patients and the occurrence of erythroblastosis fetalis in certain Rh positive infants with Rh positive mothers.[10] In the cases in which isoimmunization has occurred between different Rh blood types, the use of Rh negative blood is indicated for the same reason that group O blood can be used for individuals of groups A, B and AB in ordinary blood transfusions. The relation of the so-called Hr [11] or St [12] factor to the various Rh blood types has been clarified by the recent work of Race and his associates.[13]

1. Landsteiner, K., and Wiener, A. S.: Studies on an Agglutinogen of Human Blood (Rh) Reacting with Anti-Rhesus Sera and Human Isoagglutinins, J. Exper. Med. **74:** 309 (Oct.) 1941.

2. Wiener, A. S., and Peters, H. R.: Hemolytic Reactions Following Transfusions of Blood of the Homologous Group, with 3 Cases in Which the Same Agglutinogen Was Responsible, Ann. Int. Med. **13:** 2306 (March) 1940.

3. Levine, P.; Burnham, L.; Katzin, E. M., and Vogel, P.: The Role of Isoimmunization in the Pathogenesis of Erythroblastosis Fetalis, Am. J. Obst. & Gynec. **42:** 925 (Dec.) 1941.

4. Wiener, A. S.: Hemolytic Reactions Following Transfusions of Blood of the Homologous Group: II. Further Observations on the Role of Property Rh, Particularly in Cases Without Demonstrable Isoantibodies, Arch. Path. **32:** 227 (Aug.) 1941

5. Wiener, A. S., and Sonn, E. B.: Additional Variants of the Rh Type, Demonstrable with a Special Human Anti-Rh Serum, J. Immunol. **47:** 467 (Dec.) 1943.

6. Wiener, A. S.: Genetic Theory of the Rh Blood Types, Proc. Soc. Exper. Biol. & Med. **54:** 316 (Dec.) 1943.

7. Wiener, A. S.; Sonn, E. B., and Belkin, R. B.: Heredity and Distribution of the Rh Blood Types, Proc. Soc. Exper. Biol. & Med. **54:** 238 (Nov.) 1943.

8. Wiener, A. S.; Sonn, E. B., and Belkin, R. B.: Heredity of the Rh Blood Types, J. Exper. Med. **79:** 235 (March) 1944.

9. Ferguson, L. C.; Stormont, C., and Irwin, M. R.: On Additional Antigens in the Erythrocytes of Cattle, J. Immunol. **44:** 147 (June) 1942.

10. Wiener, A. S.: Role of the Subtypes of Rh in Hemolytic Transfusion Reactions and in Erythroblastosis, Am. J. Clin. Path. **14:** 52 (Jan.) 1944.

11. Levine, P.: The Pathogenesis of Erythroblastosis Fetalis, J. Pediat. **23:** 656 (Dec.) 1943.

12. Race, R. R.; Taylor, G. R.; Boorman, K. E., and Dodd, B. E.: Recognition of the Rh Genotypes in Man, Nature (London) **152:** 563 (Nov. 13) 1943.

13. Race, R. R.; Taylor, G. L.; Cappell, D. F., and McFarlane, M. N.: Recognition of a Further Common Rh Genotype in Man, Nature (London) **153:** 52 (Jan. 8) 1944.

Current Comment

SAFETY IN PRESCRIBING BY UNITS

Deaths have followed too frequently the erroneous use of potent therapeutic agents. On numerous occasions THE JOURNAL has reported and issued warnings about drugs improperly used or misleadingly labeled and packaged. Preparations intended for use by mouth can be expected to elicit unwanted reactions when injected. Other preparations available in two or more concentrations are likely to yield trouble unless due care is exercised when they are ordered, dispensed and applied. One cause of many accidents is the common practice of prescribing containers instead of units. Thus, the intern and nurse are instructed to give "one ampul" instead of a prescribed number of grams or milligrams expressed in percentage if the drug is in solution. N. N. R. accepted brands of the local anesthetic procaine hydrochloride, for example, include 0.02, 0.05, 0.07, 0.15 and 0.2 Gm. tablets and ampuls of 1, 2 and 10 per cent solution. One brand of the crystals for spinal anesthesia is available in 50, 100, 120, 150 and 200 mg. sizes. What would come of an order for "one ampul" of procaine hydrochloride? Error is unlikely in interpreting "Ampul Solution Procaine Hydrochloride 2 per cent, 1 cc."; "Ampul-Gold Sodium Thiosulfate, 10 mg." and "Solution Epinephrine Hydrochloride 1:1,000, 0.5 cc." The adoption of routine prescribing with proper terminology is strongly urged if accidents following mistakes in use of drugs are to be minimized.

CANCER REPORTING IN NEW YORK STATE

Morton L. Levin,[1] assistant director of cancer control, New York State Department of Health, presents cancer statistics for the state of New York and a discussion of the usefulness and workability of the recently enacted cancer reporting law. Cancer reporting in upstate New York began on Jan. 1, 1940, following legislation enacted in accordance with recommendations made by the State Legislative Cancer Survey Commission. These recommendations had previously received the endorsement of the Medical Society of the State of New York. The prevalence of cancer in New York State and its incidence according to site may be surmised from the figures for 1940 to 1942 inclusive. The total number of known persons with cancer alive at some time in 1942 was 35,378, giving an annual prevalence rate of 579 cases per hundred thousand of population. This is 3.6 times the mortality rate. These figures, in the author's opinion, are probably too low. More complete reporting would probably show the prevalence to be four or five times as great as mortality. The ratio of living cases to deaths varies according to the site of the cancer. Thus it was found that for each death from skin or lip cancer there are 30 cases, from breast and uterine cancer 5 cases, from cancer of stomach and intestine fewer than 2 cases, and from lung cancer 1 case. The value of these figures is that they indicate that the types of cancer which will be encountered most frequently in any program directed toward cases among the living will be in the following order: cancer of the skin, the breast, the uterus, the stomach and the intestine. Among men the five most frequent sites, in order of prevalence, are the skin, the prostate, the stomach, the lip and the lower intestinal tract; among women the breast, the uterus, the skin and the upper and lower intestinal tract are the most frequent sites, in decreasing order. The author feels that the law is workable when the medical profession is properly approached. If one is to judge the completeness of cancer reporting by the percentage of deaths that have been reported previously as cases, then the New York State reporting law is apparently workable and practical. The completeness of cancer reporting in New York State compares favorably with that of other reportable diseases. Cancer reporting, according to the author, has proved useful in providing material for epidemiologic investigation and for evaluation of progress in cancer control, in public education, in professional education, in aiding the follow-up of cancer patients and in the administration of public health nursing service to cancer patients.

1. Levin, Morton L.: Cancer Reporting in New York State, New York State J. Med. **44**: 880 (April 15) 1944.

MUNICIPAL MEDICAL PLANS IN ONTARIO

The legislative assembly of the province of Ontario, Canada, has adopted a measure "to enable municipalities to establish health services." This law permits any municipality either alone or on the basis of an agreement with one or more municipalities to provide for plans of municipal health services. Such plans must be submitted to a referendum before introduction and will be subject to a referendum for its abolition in the future. The plan provides for poll taxes on all residents, for payroll and for special general taxation in support of such plans. The administration is to be by means of "a board known as the Ontario Municipal Health Services Board, which shall be a body corporate and shall consist of not less than seven and not more than ten members who shall be appointed by the Lieutenant Governor in Council and shall hold office during pleasure." This board shall have the power to "enter into an agreement with any person or with any medical, hospital or other association, corporate or otherwise, for the provision of municipal health services for any municipality which has entered into an agreement with the board." The municipality is to have the power to require any employer to enforce payroll deductions for any amounts payable for the making of such a plan. The law provides for the exemption of any persons "who contribute to a plan for a provision of medical service and health service" and also for the exemption for the members of any religious denominations who may be exempted by regulations from the act.

MEDICINE AND THE WAR

ARMY

YELLOW FEVER IMMUNIZATION

In view of recent agreements reached by the War Department with the foreign governments concerned, military and civilian personnel subject to field service with the Army, and others authorized to travel to or through endemic yellow fever areas by army transport or airplane, will be vaccinated against yellow fever within four years and not less than ten days prior to entry into an endemic yellow fever area. This policy applies to all persons 10 years of age and older. In order to meet the requirements of the foreign governments concerned, children under 10 years of age who travel by army transport or airplane must have been vaccinated within two years. For the purpose of meeting quarantine requirements of all foreign countries, the Surgeon General now redefines the endemic yellow fever areas as follows: 1. In the Eastern Hemisphere, that portion of Africa lying between latitude 18 south and the northern borders of French West Africa, French Equatorial Africa and the Anglo-Egyptian Sudan, including the islands immediately adjacent thereto. 2. In the Western Hemisphere, the mainland of South America lying between latitudes 13 north and 30 south, including the islands immediately adjacent, and Panama, including the Canal Zone. However, transit through the Panama Canal with brief sojourns within the terminal port cities or army posts within the Canal Zone will not be considered as travel through an endemic area.

CORRESPONDENCE AND INQUIRIES RELATING TO MEDICAL MATTERS

The War Department issued a memorandum on May 13 stating that all correspondence and inquiries received by the War Department relating to medical matters, including among other things the health, physical status and mental condition of all personnel assigned to any branch of the Army and the status and operation of all army medical and related establishments, will be referred to the Surgeon General for the action desired. The Surgeon General will refer such communications as he may consider proper to the commanding generals, Army Air Forces and Army Ground Forces, for direct reply. The commanding generals, Army Air Forces and Army Ground Forces, will furnish a copy of such reply to the Surgeon General. He will check to see that it conforms with policy and if it does not will so inform both the headquarters concerned and the office of the chief of staff.

NINE ARMY NURSES FIRST TO SERVE IN HOSPITALS IN CHINA

Nine officers of the Army Nurse Corps have reached China to become the first Army nurses to be assigned to hospital units in China, according to a recent report by the War Department. The nine women served in hospitals in Assam, India, while their units were being established in China. Heading the group is 1st Lieut. Essie Chevalier, Galveston, Texas. The others are 2d Lieut. Arlie V. Collins, Cedar Grove, Tenn.; 2d Lieut. Jane Easton, Absecon Highland, N. J.; 2d Lieut. Mary Kraus, St. Petersburg, Fla.; 2d Lieut. Lillian G. Kelly, Baltimore; 2d Lieut. La Retta Matthews, Lakeland, Fla.; 2d Lieut. Ellen M. Riordan, Brockton, Mass.; 2d Lieut. Edith G. Rawe, New Martinsville, W. Va., and 2d Lieut. Carolyn L. Taylor, Elizabethton, Tenn.

FIELD EQUIPMENT EXHIBIT

The Army Medical School at Carlisle Barracks, Pennsylvania, dedicated and opened for inspection a field equipment exhibit, May 17, which had been created and built up by the Medical Department Equipment Laboratory. Major Gen. George F. Lull, deputy surgeon general and former director of the department of Military Sanitation at Carlisle Barracks, was principal speaker at the dedication.

AVIATION MEDICAL EXAMINERS

Graduation exercises were held on May 17 for aviation medical examiners following the course on aviation medicine. Brig. Gen. Eugen G. Reinartz, U. S. Army, is commandant of the school. The list of students graduating follows:

ALABAMA

John K. Eppes, Captain, Eufaula.
John A. Martin, Captain, Montgomery.
Daniel R. Ramey Jr., Major, Akron.

ARIZONA

Robert E. Hastings, Major, Tucson.

ARKANSAS

Albert G. McGill Jr., 1st Lieut., Little Rock.
Art B. Martin, 1st Lieut., Fort Smith.
Charles W. Rasco Jr., Captain, De Witt.
Clyde D. Rodgers, Major, Little Rock.
Asa C. Watson Jr., 1st Lieut., Little Rock.

CALIFORNIA

L. Grant Baldwin, Major, Pasadena.
Rene Cailliet, 1st Lieut., Los Angeles.
Clarence E. Dixon, Captain, Los Angeles.
Daniel W. Donahue, 1st Lieut., Los Angeles.
Olley D. Ellefson, Captain, Sanger.
Otto F. Kraushaae, 1st Lieut., Pasadena.
Jack B. Lomas, Captain, Los Angeles.
Norman Nixon, Major, Beverly Hills.
Millard P. Olney, Captain, Los Angeles.
Charles B. Paisley, 1st Lieut., Inglewood.
Robert A. Vaughan, 1st Lieut., Los Angeles.
Ralph W. Wright, Major, Atherton.

COLORADO

Terry J. Gromer, Captain, Denver.
Walter L. Wright, 1st Lieut., Monte Vista.

CONNECTICUT

Jack J. Albom, Major, New Haven.
David F. Conway Jr., Major, New Haven.
John P. Merrill, 1st Lieut., Hartford.
Maxwell Pasternak, 1st Lieut., New Haven.

DISTRICT OF COLUMBIA

Richard H. Spire, 1st Lieut., Washington.

FLORIDA

Frank J. Fischer, Captain, Fort Lauderdale.

GEORGIA

Oliver F. Bush, 1st Lieut., Columbus.
Donald R. McRae Jr., Captain, Augusta.
Richard L. Schley Jr., Captain, Savannah.

IDAHO

Brainard E. Hines, Major, Pocatello.

ILLINOIS

Robert B. Brugman, 1st Lieut., Oak Park.
Marvin G. Flannery, Lieut. Col., Evanston.
Clifford G. Grulee Jr., Captain, Evanston.
Ferris D. Highsmith, 1st Lieut., West Union.
Edward L. Jansen, Captain, Chicago.
Donald J. Keating, Captain, Momence.
Vincent J. Kelly, Captain, Kankakee.
Alvin R. Larson, 1st Lieut., Evanston.
Victor M. Towle, Captain, Chicago Heights.
John A. Weidemann, 1st Lieut., Oak Park.
Jack Williams, 1st Lieut., Casey.
William S. Wolf, Major, Chicago.

INDIANA

Mount E. Frantz, Captain, Danville.
Kenneth L. Shaffer, Captain, Vincennes.

IOWA

Wayne K. Cooper, Major, Fort Dodge.
James B. Lawson, 1st Lieut., Des Moines.
Robert V. Thomson, 1st Lieut., Sioux City.

KANSAS

Daniel L. Tappon, 1st Lieut., Salina.

LOUISIANA

Donald J. Baranco, 1st Lieut., Lafayette.
Victor A. Hinterlang, 1st Lieut., New Orleans.

MARYLAND

Harry M. Beck, Captain, Baltimore.
Louis C. Gareis, 1st Lieut., Baltimore.
Robert A. Kiefer, 1st Lieut., Catonsville.
Halley B. Taylor Jr., 1st Lieut., Baltimore.

MASSACHUSETTS

Harold Karlin, Captain, Boston.
Harry N. Memery, Captain, Longmeadow.

MICHIGAN

George S. Barnes, 1st Lieut., Belzoni.
Ralph E. Dawson Jr., 1st Lieut., Blanchard.
Arthur L. McGilvra, 1st Lieut., Saginaw.

MINNESOTA

David P. Anderson Jr., Major, Austin.
John E. Eckdale, Captain, Lyle.
Norman G. Hedemark, Major, St. Paul.
James G. Myhre, 1st Lieut., Stephen.
Robert A. Schneider, 1st Lieut., Minneapolis.
Abbott Skinner, 1st Lieut., St. Paul.
Earl V. Wetzel Jr., Major, Little Falls.

MISSISSIPPI

Joseph T. Ainsworth, 1st Lieut., Raymond.

MISSOURI

Fred C. Buffington, Captain, St. Louis.
Justin J. Cordonnier, Lieut. Col., University City.
Roy A. Highsmith, 1st Lieut., St. Louis.
Ralph J. McQuiston, Lieut. Col., Kirkwood.

Edward P. Reh, Captain, St. Louis.
John R. Showalter Jr., 1st Lieut., Glendale.

NEBRASKA

James Richard Paul, 1st Lieut., Lincoln.
Jonas A. Proffitt, 1st Lieut., Hastings.
Maurice Tatelman, 1st Lieut., Omaha.

NEVADA

Frederic J. Foster, Major, Ruth.

NEW HAMPSHIRE

Frank L. Fletcher, Lieut. Col., Milford.

NEW JERSEY

William G. Bernhard, Major, Summit.
Bertram M. Bernstein, 1st Lieut., Trenton.
George F. Greiner, Captain, Union City.
Paul B. Patton, Captain, Blairstown.
John P. Riordan, 1st Lieut., South Orange.
James E. Zullo, 1st Lieut., Jersey City.

NEW MEXICO

Robert N. Caylor, Captain, Las Cruces.
Allen C. Gwinn, Major, Carlsbad.
William D. Radcliffe Jr., Major, Belen.

NEW YORK

Albert Abelson, Captain, Forest Hills.
John R. Bickle, 1st Lieut., New York.
Reynold E. Burch, 1st Lieut., New York.
Emanuel Dejnozka Jr., 1st Lieut., Rock City Falls.
John P. Hylant, Captain, Buffalo.
Thomas R. Noonan, Major, Buffalo.
Franklin Robinson, 1st Lieut., New York.
Edward G. Skerritt, 1st Lieut., Brooklyn.
Ralph F. Spencer, Captain, Hudson.
John E. Sullivan Jr., Captain.
Ralph P. Townsend, 1st Lieut., Hartsdale.
Robert L. Zimmerman, 1st Lieut., New York.

NORTH CAROLINA

Trumbull Frazer, 1st Lieut., Asheville.
Charles L. Newland, Major, Brevard.
Richard O. Rex, Major, Wilkesboro.
Henry L. Valk, 1st Lieut., Winston-Salem.

OHIO

Russell C. Bane, Captain, Chillicothe.
Earl W. Burgner, Major, Akron.
Robert B. Burrell, 1st Lieut., Columbus.
Harold B. Elliott, Captain, Springfield.
Norbert S. Greene, Major, Cleveland.
Herman H. Ipp, Major, Youngstown.
Francis W. McCoy, 1st Lieut., Columbus.
Lawrence B. Mehl, Captain, Cuyahoga Falls.
Robert E. Merrill, Captain, Delta.
John Noll Jr., Lieut. Col., Youngstown.
Karl F. Ritter, Captain, Lima.
David J. Roberts, Captain, Akron.
Harold D. Waltz, Major, Sandusky.

PENNSYLVANIA

William A. Altenhoff, Captain, Bellevue.
George M. Austin Jr., 1st Lieut., Philadelphia.
Joseph Beinstein, Captain, Wilkes-Barre.
William C. Browne, Captain, Corydon.
Jay H. Daniels, Captain, Connellsville.
Thomas E. Davies, 1st Lieut., Blossburg.
Robert J. Dickinson, Captain, Ridgway.
Francis C. Dohan, Captain, Bala-Cynwyd.
Russell P. Green, Captain, Philadelphia.
Alonzo W. Hart, Captain, Philadelphia.
Matthew A. Hetrick, 1st Lieut., Harrisburg.
John E. Keller, Captain, Reading.
William B. Kiesewetter, Captain, Chalfont.
Cedric S. King, 1st Lieut., Bryn Athyn.
Emil C. Krug III, 1st Lieut., Wilkinsburg.
David M. Melenson, Captain, Philadelphia.
Richard C. Murray, 1st Lieut., Philadelphia.
Robert J. Nevin, Captain, Washington.
Joseph M. Quashnock, Captain, Pittsburgh.
Edwin R. Raymaley Jr., 1st Lieut., Wilkinsburg.
Norman J. Skversky, Captain, Philadelphia.
Cyril C. Stapinski, 1st Lieut., Glenlyon.
Edward J. Zmyslinski, 1st Lieut., Erie.

SOUTH CAROLINA

George W. Brunson, 1st Lieut., Orangeburg.
William C. Marett Jr., 1st Lieut., Seneca.

TENNESSEE

Harrison O. Bourkard, Captain, Knoxville.
John C. Hawk, Captain, Chattanooga.
Roy M. Neudecker, Captain, Memphis.
Spencer A. Truex Jr., 1st Lieut., Jackson.

TEXAS

Harold B. Cameron, 1st Lieut., Commerce.
James C. George II, 1st Lieut., Brownsville.
Carl B. Goolsby, 1st Lieut., Crockett.
Lee R. Rice, Captain, Gainesville.
John V. Sessums, Major, San Angelo.
Fred D. Spencer, 1st Lieut., Brownwood.
John M. White Jr., Captain, Port Arthur.
Franklin W. Yeager, 1st Lieut., Corpus Christi.

VIRGINIA

Benjamin R. Allen, Major, Richmond.
John B. Merrick, 1st Lieut., Arlington.
Irwin M. Nuckols, Captain, Mount Sidney.

WASHINGTON

John R. Corkery, Captain, Spokane.
Philip M. Rogers, Captain, Seattle.

WEST VIRGINIA

Harry F. Coffman II, 1st Lieut., Keyser.
Olin M. Goodwin, Captain, Buckhannon.
Louis C. Kossuth, Captain, Wheeling.

WISCONSIN

James A. Thompson Jr., 1st Lieut., Madison.

WYOMING

Hamilton B. Webb, Captain, Cheyenne.

In addition there was one member of the Medical Corps of the Chilean Air Force, Lieut. Olimpo U. Molina.

RATION KITS FOR USSAF IN EUROPE

A sliding packet of greased cardboard containing 10 hard candies, 10 pastilles, 3 pieces of toffee and 8 pieces of chewing gum was recently designed by Col. Dallas L. Knoll, air service command quartermaster, to be carried by combat crewmen flying long journeys into Europe at high altitudes, who were found suffering from excessive fatigue and hunger. Since the protective clothing worn by these men to keep out cold was too bulky to permit them to carry sandwiches and chocolate bars this packet has proved satisfactory. It contains over 600 calories and weighs only 5¾ ounces. The carton is designed so that it can be easily opened, and the sweets are unwrapped so that they can be eaten without fumbling with sticky papers. The carbohydrate content of the chewing gum and sweets is easily assimilated into the blood stream and results in an increase in blood sugar.

AIR MEDAL AWARDED ARMY NURSES

The first Air Medal ever awarded to a woman in the history of the United States Army was to 2d Lieut. Elsie S. Otto, who served as a nurse for 5 patients who were evacuated from India to Washington, D. C. This medal was received "for meritorious achievement for participating in an aerial flight."

The second Air Medal went to 2d Lieut. Dorothy T. Shikoski, who showed heroism above the call of duty during a crash landing of a plane at sea during a severe storm. Lieutenant Shikoski endangered her own life in attempting to save that of a corporal in a dangerous spot in the forward part of the plane. Despite being injured herself, she helped load food and medicine into the little rubber boat. The plane sank in six minutes. Since that time Lieutenant Shikoski has been awarded two oak leaf clusters in lieu of additional medals.

CONFERENCE ON MEDICAL PROBLEMS HELD AT GENERAL HOSPITAL

A conference on medical problems peculiar to the armed forces was recently held at the Newton D. Baker General Hospital, Martinsburg, W. Va. (THE JOURNAL, April 8, p. 1065), which was attended by both military and civilian groups. Dr. James Edgar Paullin, President of the American Medical Association, addressed the conference. Brig. Gen. Hugh J. Morgan and Brig. Gen. C. C. Hillman of the Office of the Surgeon General, Washington, D. C., attended the conference. Other guests included members of the Eastern Panhandle Medical Association of West Virginia and the Washington County, Md., Medical Association. Col. E. L. Cook, commander at the Newton D. Baker General Hospital, announced that the formal dedication of the hospital would take place June 9.

LIEUTENANT COLONEL LITTELL EXECUTIVE OFFICER AT VAUGHAN GENERAL HOSPITAL

Lieut. Col. George S. Littell has been named executive officer of the Vaughan General Hospital, Maywood, Ill., which is nearing completion. Dr. Littell recently returned from nearly two years' service in the Southwest Pacific. He was deputy chief surgeon of the American forces in the Southwest Pacific and was later appointed chief of preventive medicine in the chief surgeon's office. He returned to the United States last November and has been serving at the Surgeon General's Office. Dr. Littell succeeds Col. Stuart G. Smith, who has gone overseas.

ARMY HOSPITALS IN INDIA NOW AIR CONDITIONED

A number of air conditioning units, built by the York Corporation, have been installed in British military hospitals in India to guard against the dangers of perspiration borne infection in American and British soldiers' open wounds during convalescence in that excessively humid climate. General recovery of convalescents is speeded up also because of the units' capacity to combat atmospheres with a temperature of 110 F. and above the humidity of 80 per cent and more.

ARMY AWARDS AND COMMENDATIONS

Captain Marco R. Bonsignore

The Silver Star Medal was recently awarded to Capt. Marco R. Bonsignore, formerly of Buffalo, for "gallantry in action near Bompietro, Sicily, July 23, 1943. During a violent engagement with the enemy he proceeded to the aid of an infantry unit which had suffered heavy casualties. Undaunted by enemy artillery and small arms fire, he skilfully treated the wounded and directed their speedy evacuation. His splendid initiative inspired those who witnessed his actions." Dr. Bonsignore graduated from the University of Rome in 1935 and entered the service April 15, 1940.

Colonel Joseph Haas

Col. Joseph Haas, formerly of New York City and now commanding officer of a United States Army station hospital in England, has recently been commended in a letter from Major Gen. Paul R. Hawley, chief surgeon of the European theater of operations. The letter said in part "I can truthfully say I have no finer hospital in the European theater of operations. . . . I am particularly pleased that an old friend and loyal subordinate of twenty-five years ago is again supporting me so well." Dr. Haas served under General Hawley's command in the first world war. He volunteered for service in the first world war and was commissioned a first lieutenant in the Medical Corps in June 1917. He became regimental surgeon of the 334th Infantry. When the war ended he was commanding a field hospital in occupied Germany. Now he is commanding a station hospital in England which is serving Allied troops massed for invasion.

Captain David N. Kerr

The War Department recently announced the award of the Silver Star to Capt. David N. Kerr, formerly of St. Louis, for "gallantry in action near El Guettar, Tunisia, March 28, 1943. During two successive enemy counterattacks, under intense enemy machine gun and artillery fire, he successfully treated and evacuated a number of wounded men. His courageous and unselfish actions undoubtedly saved many lives." Dr. Kerr graduated from Washington University School of Medicine, St. Louis, in 1941 and entered the service Jan. 10, 1942.

MISCELLANEOUS

URGENT NEED FOR NURSES

Dr. Frank H. Lahey, chairman of the Directing Board of the War Manpower Commission's Procurement and Assignment Service, which is responsible for the equitable allocation of nurses between the armed forces and the civilian population, stated that 10,000 graduate nurses have been requested by the Army between now and July 1, 1945 and that the Army would like at least 5,000 of them by Dec. 31, 1944. The Navy also has a continued urgent need for at least 500 nurses a month until its full strength is achieved. In addition, both services will always require some replacements.

Although all active graduate nurses in the United States have not yet been classified by the Procurement and Assignment Service as to whether they are available for military service or essential to civilian care, reports from thirty-two states show that the nursing profession can still spare nurses for active duty with the Army or Navy. Sixty thousand nurses have been classified in those states, and those who have been declared available are expected to apply for a commission in the Army or Navy Nurse Corps. Reports from the remaining states where classifications have not been completed are expected soon.

The Procurement and Assignment Service, which was established in 1941 to allocate physicians, dentists, veterinarians and sanitary engineers, was not given the responsibility for nurses until July 1943. A classification system for nurses, comparable to that established for physicians, was therefore established recently to anticipate military needs before they become acute.

PROCESSING OF PHYSICIANS

Both the Army and the Navy have authorized the appointment of civilian physicians and dentists to commissioned grade for assignment to duty with the Veterans Administration, provided they are unacceptable to the Army or the Navy because of physical disqualification or age and the War Manpower Commission has declared them, in each case, available. The Army will appoint for this duty civilian doctors and dentists up to the age of 63 years; the maximum age for Navy appointment is 60 years. Applications of physicians and dentists declared available to the Army will be handled as follows: (*a*) Those physically disqualified for duty with an army installation or unit but physically qualified for duty with the Veterans Administration will be considered for appointment in the Army of the United States and assignment to a Veterans Administration installation. (*b*) Those physically qualified for general or limited military service with an army installation or unit will be considered as follows: (1) Those under the age of 45 years may be commissioned in the Army of the United States for duty with an army installation; (2) those between 45 and 55 years of age who are physically qualified for general military service only will be referred by the Officer Procurement Service to the Navy for consideration for appointment by the Navy for duty with a navy installation; (3) those between the ages of 55 years and 63 years will be considered for appointment in the Army of the United States for duty with the Veterans Administration only.

On contacting a physician made available to the Army, he should be informed that if physically disqualified for duty with an army or navy installation, or over age for either service, he may be qualified for duty with a Veterans Administration facility. If commissioned in the Army and placed on duty with the Veterans Administration he has all the rights, privileges and obligations of any other army officer. Veterans Administration's professional standards are identical with those of the Army.

For the present the Veterans Administration does not require the services of dentists under this program.

Previous instructions on the processing of physicians, interns and residents have been canceled.

OREGON STATE MEDICAL SOCIETY PUBLISHES SERVICE BULLETIN

With its July issue the Oregon State Medical Society's *Service Bulletin*, an experiment in human relations, ends its first year of publication and pauses to count its blessings, which it finds are numerous.

A year ago the society became aware of the fact that the abrupt and complete jerking away of a physician into service from his normal professional life and contacts was no less a devastating experience than the disruption of his family and social life. In a way it was worse, for correspondence with relatives and friends kept him in touch with his personal life but, although medical journals kept him informed as to developments in medical science, nothing existed to keep him familiar with his confrères or with changing conditions of practice at home that might affect his future.

In no time at all he felt himself pocketed, isolated professionally, uncertain as to his future. It was in an effort to bridge this gap that the *Service Bulletin* was started. It is sent without charge to all reputable physicians of the state, in service or not, members of the society or not. It is strictly a news organ, scrupulously edited and wholly free of propaganda. It carries a complete roster of physicians in the armed forces from the state, with their addresses as far as consorship permits. It has a department of personal letters and news, and it summarizes medical activities in the state. When the confusion in Congress over absentee voting became obvious, the *Bulletin* checked its roster against county lists, sent out registration blanks by air mail and saw to it that every Oregon physician

within reach of air mail was given an opportunity to vote in the primaries. Its whole aim has been to keep men in service so closely in touch with one another and with those at home that they will return to their state as familiar friends, not as strangers, with their participation in civil and professional life uninterrupted.

The response has been startling. Direct response (letters or cards) came from 83 per cent of all physicians in service from the state—from 88 per cent of those overseas. Publishable news letters were sent in by 55 per cent of those overseas and 31 per cent of those still in the United States, and, most satisfying of all, 38 per cent of all in service have taken the time and trouble to write in commendatory and appreciative letters. The response from the civilian physicians has been scarcely less impressive. All in all, the *Service Bulletin* celebrates its first birthday in a comfortable glow of having done a job that people really wanted done.

ESTABLISH JOINT TREATMENT CENTERS

Joint treatment centers in the special fields of plastic surgery, neurosurgery and orthopedic surgery will be established in Montreal, Toronto, Winnipeg and Vancouver by the Army, Navy and Air Force and the Department of Pensions and National Health. It is expected that similar joint centers may be opened in other cities and that the pooling of service specialists may spread to other branches of surgery. An advisory committee of surgical consultants from the three services and the Pensions Department has been formed to make recommendations for staffing the units and for common policy. Included on this committee are Col. R. I. Harris, chairman; Capt. Donald Webster, Wing Comdr. A. W. Farmer and Dr. E. B. Convery of Ottawa. The centers will be established as follows:

Neurosurgery: Montreal, at Ste. Anne Hospital and Montreal Neurological Institute to serve eastern Canada; Toronto, at Christie Street Hospital to serve Ontario except the northwestern portion; Winnipeg, at Deer Lodge Hospital to serve the eastern part of the prairie provinces and northwestern Ontario; Vancouver, at Shaughnessy Hospital to serve the Pacific Coast.

Plastic Surgery: Toronto, at Christie Street Hospital, Hamilton at R. C. A. C. Convalescent Hospital.

Orthopedic Surgery: Toronto, at Christie Street Hospital to serve Ontario except the northwestern portion; Winnipeg, at Deer Lodge Hospital to serve the eastern part of the prairie provinces and northwestern Ontario; Vancouver, at Shaughnessy Hospital to serve the Pacific Coast; Montreal, at Ste. Anne's Hospital to serve eastern Canada pending the establishment of such a center in the Maritime Province.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL June 10, page 436)

INDIANA

Epworth Hospital, South Bend. Capacity, 270; admissions, 9,065. Mr. Vernon T. Root, Administrator (intern).

MICHIGAN

St. Lawrence Hospital, Lansing. Capacity, 230; admissions, 6,897. Sister Mary Assisium, Superintendent (interns).

MINNESOTA

Bethesda Hospital, St. Paul. Capacity, 180; admissions, 6,083. Rev. L. B. Benson, Superintendent (interns).

NEW YORK

Kingston Hospital, Kingston. Capacity, 133; admissions, 2,484. Miss Jessie P. Allan, Superintendent (mixed resident).

TEXAS

Nix Hospital, San Antonio. Capacity, 181; admissions, 5,150. Miss Ellen L. Brient, R.N., Superintendent (intern).

SUPPLEMENT TO BIBLIOGRAPHY OF AVIATION MEDICINE

Lieut. Comdr. E. C. Hoff recently visited the Yale Aeromedical Laboratory, Yale School of Medicine, New Haven, Conn., to discuss the final preparation for the forthcoming supplement to the Bibliography of Aviation Medicine. Volume one of this work was published under the auspices of the National Research Council and brings together in a detailed classification all problems in aviation up to June 1942. This literature includes not only work bearing directly on the medical aspects of flying personnel but a large amount of investigative work that has been carried out at high mountain altitudes, in decompression chambers and in experimental laboratories where low oxygen mixtures have been administered. With the tremendous expansion of military aviation there has appeared a large amount of additional literature since the first volume of the Bibliography of Aviation Medicine was published. Furthermore, a number of special problems within the field of aviation medicine have had a particularly rapid growth and have come into special prominence. It is hoped that this supplement, which will also be published under the auspices of the National Research Council, will be available for distribution within a short time to flight surgeons and research workers in aviation medicine.

COMMUNITIES IN NEED OF PHYSICIANS

The following communities have applied to the U. S. Public Health Service for federal assistance in obtaining the services of physicians under the recently enacted law authorizing an appropriation of $200,000 for the relocation of physicians:

Pineville (Mecklenburg County), North Carolina
Waxhaw (Union County), North Carolina
Glenrock (Converse County), Wyoming
Leola (McPherson County), South Dakota
Faith (Meade County), South Dakota
Vale (Malheur County), Oregon
McEwen (Humphreys County), Tennessee
Tribune (Greeley County), Kansas
Colome (Tripp County), South Dakota

Physicians interested in locating in these communities should communicate with the Surgeon General, United States Public Health Service, Washington (Bethesda Station), D. C.

PRESCRIPTION OF CREAM FOR THE SICK

On June 2 the War Food Administration issued War Food Order 13, Amendment 2, concerning the use of heavy cream in the treatment of the sick, which was discussed in an editorial in THE JOURNAL, Feb. 19, 1944, page 511. The amendment requires that prescriptions for heavy cream be approved "by the public health officer, or the secretary of the county medical society, of the municipality or county" wherein the patient obtaining the prescription resides or the hospital desiring heavy cream is located, and is effective as of June 7.

WARTIME GRADUATE MEDICAL MEETINGS

Additional subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

At the Rhoads General Hospital, Utica, N. Y.: Malaria, Dr. Bertram Levinson, June 20; Blood and Blood Substitutes: Their Indications and Uses, Dr. Frederick Marty, July 20; Wounds of the Extremities and Their Management, Dr. Roscoe Severance, August 17.

CUTTER LABORATORIES AWARDED ARMY-NAVY E PENNANT

Cutter Laboratories, Berkeley, Calif., were recently presented with the Army-Navy E pennant for outstanding achievement in war production. Dr. Benjamin W. Black, chairman at the presentation, stated that Cutter Laboratories' "production of blood plasma, vaccines and penicillin is unequaled in the world."

ORGANIZATION SECTION

OFFICIAL NOTES

COUNCIL ON MEDICAL SERVICE

The Council on Medical Service of the American Medical Association held a conference on the provision of medical care for the American people at the Mayflower Hotel in Washington, May 22. Those present at the conference included the officers of the American Medical Association members of the Council and representatives of governmental agencies interested in health, Congressman A. L. Miller of Nebraska and Congressman F. C. Smith of Ohio, and representatives of the American Dental Association, Congress of Industrial Organization and the American Federation of Labor. In opening the conference Dr. Louis H. Bauer of Hempstead, N. Y., chairman of the Council, said:

"The American Medical Association a year ago established this Council on Medical Service and Public Relations to make, among other things, a survey of the medical care situation and to develop a distribution of medical care that would reach every man, woman and child in the United States. The council has studied compulsory sickness insurance in general and the Wagner-Murray-Dingell bill in particular. It has studied surveys of public opinion, it has investigated voluntary medical expense insurance, group hospital insurance and the various industrial health plans. It has considered the establishment of diagnostic centers and, in fact, it has discussed nearly all phases of medical care and the means suggested to improve the distribution of good medical care.

"This conference has been called to make certain that all the ideas of every one interested in medical care would be available for our consideration. It goes without saying that we are all interested in one goal—namely, the distribution of a high type of medical care to 100 per cent of the population. We feel that if we all understand and listen to every one's point of view we should be able to effect agreements, provided we adhere to that main goal of reaching everyone within his means to pay. There is one point on which no compromise is possible, and that is that a high quality of medical care must be given to all.

"Our problem involves preventive medicine, curative medicine, public health medicine, laboratory medicine, medical education and medical research.

"We believe that the answer to the problem is not a single answer but a multiple answer. What will be satisfactory for a large industrial group will not necessarily be satisfactory or practicable for a scattered agricultural population.

"However, if we all are willing to pull in the same boat we should be able to solve the complex problem with reasonable satisfaction to all.

"We appreciate your giving your time to come here today and we shall appreciate hearing your thoughts. I can assure you that every member of this council is earnestly impressed with the importance of the problem and will do his level best to help solve it.

"We have asked each of you to present his ideas briefly and, after all have had an opportunity to be heard, we hope there will be time for some friendly discussion. If you have not already done so, will you please give the secretary a copy of your remarks so that they will be available for detailed study by the council. If this conference proves worth while, and we are sure it will, we hope that other conferences may be held from time to time in the future. In the meantime, if at any time any of you have problems which affect your particular group which you feel the council could aid you in solving, I hope you will feel free to call on us and I can assure you of our hearty cooperation."

Dr. Thomas Parran, Surgeon General of the United States Public Health Service, emphasized the importance of preventive medicine, continuing research and the extension of facilities such as hospitals and health centers.

Congressman Smith opposed regimentation of medicine, pointing out that such regimentation would lead eventually to regimentation of finance and of labor.

Dr. Wilburt Davison of Duke University School of Medicine pointed to the importance of maintaining medical service and a supply of physicians for rural areas.

Mr. George F. Addis of the C. I. O. stated, as the policy of that organization, support of a federal system of security against sickness, including hospitalization and medical care. He did not believe this could be accomplished by the plans of medical societies or by private insurance companies.

Congressman Miller urged particularly unification of health agencies of the government in a single agency, and especially transfer of the health functions of the Children's Bureau to the United States Public Health Service.

Mr. Watson Miller of the Federal Security Agency said that the administration has no fixed formula but will do everything possible to develop further channels for extending health and medical service to more and more people.

Statements were made also by Dr. Martha Eliot of the Children's Bureau; Dr. F. F. Borzell of Philadelphia, chairman of the Council on Medical Service of the Pennsylvania State Medical Society; Capt. E. F. Wells, U.S.N.R., president of the American Dental Association; Dr. F. R. Sanderson, president of the Medical Society of the District of Columbia; Dr. E. H. Cary of Dallas, Texas, chairman of the board of the National Physician's Committee; Senior Surgeon Dean A. Clark, U. S. P. H. S., attached to the office of vocational rehabilitation, and Dr. Paul C. Barton of the War Manpower Commission's Procurement and Assignment Service for Physicians, Dentists and Veterinarians. Dr. Barton pointed out the necessity for maintaining a continuing supply of physicians to provide medical service regardless of various plans for extending medical service. A sufficient number of medical students of high quality is basic to the development of complete and competent medical care, he said.

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Departments of the United States Army and the United States Navy are on the air each Saturday (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time).

The titles and guest speakers for the next two programs are as follows:

June 17. "Mechanized Dandruff."
Speaker, Brig. Gen. James S. Simmons, Chief, Preventive Medicine Service, War Department, Washington, D. C.

June 24. "Serving all Services."
Honor Citations and Service Melodies.

Owing to the uncertain state of communications consequent on fast shifting military fronts, it has been impossible to arrange the Doctors at War broadcast scheduled for July 1, on which it was planned to present Army and Navy medical officers by short wave from actual war theaters. Doctors at War, therefore, will close with the broadcast of June 24. This will be a special broadcast emphasizing the services of doctors to all branches of the armed forces. It will be a special broadcast of military music by the N. B. C. orchestra, a male chorus and a contralto soloist. The program and the series will close with a radio "taps" ceremony honoring physicians who have given their lives in the service of the men and women of our armed forces.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 1808 has passed the Senate and House, a bill to authorize temporary appointments as officers in the Army of the United States of members of the Army Nurse Corps, female persons having the necessary qualifications for appointment in that corps, female dietetic and physical therapy personnel of the Medical Department of the Army, exclusive of students and apprentices, and female persons having the necessary qualifications for appointment in such department as female dietetic or physical therapy personnel. H. J. Res. 241 has passed the House, requesting the President to approach the governments of all opium producing countries throughout the world urging them to take immediate steps to limit and control the growth of the opium poppy and the production of opium and its derivatives to the amount actually required for strictly medicinal and scientific purposes. H. R. 735 has passed the House, a bill providing that all persons who served in a civilian capacity under the jurisdiction of the Quartermaster General during the war with Spain, the Philippine Insurrection or the China Relief Expedition on vessels owned by the United States and engaged in the transportation of troops, supplies, ammunition or materials of war who were discharged for disability incurred in such governmental service in line of duty shall be entitled to medical and hospital treatment and domiciliary care in Veterans' Administration facilities in the same manner and to the same extent as now or hereafter provided for veterans of any war. H. R. 4729 has passed the House, authorizing an appropriation of $500,000 to provide books published either in raised characters, or sound reproduction records, or in any other form, for the use of the adult blind residents of the United States. H. R. 4881 has passed the House, a bill to bring Isonipecaine within the coverage of federal narcotic laws.

WOMAN'S AUXILIARY

Mississippi

Open house in observance of Doctor's Day was held recently when members of the auxiliary to the South Mississippi Medical Society entertained at the home of Dr. and Mrs. J. P. Culpepper Jr.

Missouri

The convention of the Missouri auxiliary was held in Kansas City April 24. A board meeting and a buffet supper preceded the meeting at the home of Mrs. Earl Padgett, president of the Jackson County auxiliary. Dr. W. W. Bauer gave an address on "Courage Is Not Rationed." This year Missouri added three new auxiliaries and shows a gain in membership. Mrs. L. B. McCubbin of Fulton is the new president and Mrs. Harry Gilkey of Kansas City was chosen president-elect.

The twentieth annual meeting of the Woman's Auxiliary to the Missouri State Medical Association was held recently in Kansas City at the Hotel President. Mrs. R. C. Haynes of Marshall presided. Dr. W. W. Bauer, director of the Bureau of Health Education of the American Medical Association, spoke on "Courage Is Not Rationed."

Mr. Thomas W. Parry, public relations consultant, addressed the members of the convention on "The Doctor's Wife in a Public Relations Program." Dr. A. W. McAbster paid tribute to his father, Dr. A. W. McAbster, who had given so generously to the cause and success of his noble and beloved profession. A portrait of Dr. McAbster was unveiled at this time.

Rev. Father Schwitalla, S.J., dean of St. Louis University School of Medicine, gave an address on the details of the position of medical education in federalized medicine.

Mr. John M. Pratt, administrator of the National Physicians Committee, spoke on "What the American People Think About Doctor's Medical Care and the Prepayment Plan."

Mrs. J. B. McCubbin of Fulton and Mrs. Harry M. Gilkey of Kansas City were installed as president and president-elect, respectively.

New Jersey

The Woman's Auxiliary to the New Jersey Medical Society held its seventeenth annual meeting April 25-26 in Atlantic City.

New York

The annual convention of the New York auxiliary was held May 8-11 at the Hotel Pennsylvania, New York City.

The Herkimer County auxiliary celebrated its fourth anniversary recently at the Mohawk Valley Country Club. This auxiliary has been donating books and magazines to the Herkimer Memorial Hospital.

North Carolina

A new auxiliary was recently organized in Wilson County with Mrs. Eric Bell as president.

The Greenville German Club donated $25 to the North Carolina auxiliary to help buy an emergency medical field set for the destroyer *Fremont.*

Ohio

The fourth annual meeting of the Ohio auxiliary was held recently in Columbus concurrently with the ninety-eighth annual meeting of the Ohio State Medical Association.

Members of the Woman's Auxiliary to the Cincinnati Academy of Medicine have been commended by the city board of health for their assistance in the physical examination of high school students and at the Max Stern Heart Station.

Twenty-nine members of the Franklin County auxiliary have enrolled in a course of current community and city health problems being conducted by Mrs. Ralph Hoffman, chairman of education.

Pennsylvania

The Woman's Auxiliary to the Beaver County Medical Society recently met at the Penn-Beaver Hotel, Rochester, Pa., for a luncheon, with twenty-three members in attendance; Mrs. A. W. Cully, president, conducted a short business meeting. Mrs. H. M. Fleming, *Hygeia* chairman, reported the sale of fifty *Hygeia* subscriptions. Mrs. H. B. Jones reported on the War Participation Committee. Letters were written to each doctor from the county now in service. Mrs. R. A. Marquis reported good progress in the collection of old instruments.

South Carolina

The Pickens County auxiliary donated $10 to buy cod liver oil for indigent children and tuberculosis patients.

West Virginia

Doctor's Day was observed by the Kanawha County Auxiliary recently with a luncheon at the Charleston Woman's Club. A paper was read on "Doctors in the War," after which the local doctors in service were named, and their rank, branch of service and location were given. A large map of the world was used and flags attached to show where the doctors were serving. Twenty dollars was given to the Red Cross War Fund.

Wisconsin

The midyear meeting of the board of directors of the Woman's Auxiliary to the State Medical Society of Wisconsin was held recently in Milwaukee. Mrs. Eben J. Carey, national president, spoke briefly of the program of the Woman's Auxiliary.

The Brown-Kewaunee-Door County Medical Auxiliary met recently at Green Bay. Mrs. P. R. Monohan was elected president.

Six students of Central High School, Sheboygan, presented a round table discussion of the Wagner-Murray-Dingell bill before the Sheboygan auxiliary at its recent meeting.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Physicians Needed.—The Los Angeles County Civil Service Commission announces positions in the county general hospital and other county institutions. Anesthetists and physicians specializing in tuberculosis are specifically mentioned. The positions, paying $290 to $344 a month, are open for permanent appointment to physicians who are not over 55 years of age. Applications for the positions available to physicians must be filed on or before June 24. Applications for the positions available to anesthetists with the degree doctor of medicine must be filed before July 1. Additional information may be obtained from the office of the commission, room 102, Hall of Records, Los Angeles 12.

Labor Approves Preemployment Blood Tests.—The Bay Area Metal Trades Council of the American Federation of Labor unanimously passed a resolution recently approving voluntary preemployment serologic examinations which are conducted by management in cooperation with the health departments. Medical representatives of management will secure the serologic specimens for submission to the laboratory of the San Francisco City and County Department of Public Health. The results will be referred to the division of venereal diseases of the local department of health. All information will be kept confidential. Efforts will be made to inform persons with positive examinations and to have them begin treatment. No threat of discharge or relief of employment will be made. Establishment of the program was made possible with the assistance of the California Social Hygiene Association, the cooperation of union officials and the division of venereal disease of the city and county health department.

CONNECTICUT

Personal.—Dr. Reo J. Marcotte has resigned as assistant director of the New Haven Hospital, New Haven, to become administrator of the House of Mercy Hospital, Pittsfield, Mass.

Clinical Congress.—The twentieth clinical congress of postgraduate medicine of the Connecticut State Medical Society will be held in New Haven, September 28-29, under the chairmanship of Dr. Francis G. Blake, dean of the Yale University School of Medicine.

Institute on Hospital Help.—The first institute on hospital personnel management will be conducted June 26-30 at Yale University, New Haven, under the auspices of the American Hospital Association. Cooperating agencies include the university, the New England Hospital Assembly and the Connecticut Hospital Association. James A. Hamilton, director of the New Haven Hospital, will head the institute. Lectures, seminars and round table and panel discussions will include consideration of such subjects as personnel problems, selection and placement, labor turnover, wages and financial incentives, supervision of employees, morale building, merit rating and promotion, organization of training programs, handling of grievances, collective bargaining and employee health service and related problems. The faculty will be composed of leaders from hospital administrative staffs, university faculties, industry and government.

GEORGIA

Medical School Provides Care for State Prison.—On May 4 the board of regents adopted a resolution authorizing the University of Georgia School of Medicine, Augusta, to cooperate in every possible way in providing medical care for the Georgia State Prison in accordance with a recommendation made by the faculty of the school of medicine. The board also offered the facilities of the University System of Georgia to the authorities of the state prison to help the institution. The action followed a study of the situation at the prison made by a committee from the medical school. The program means that interested graduates of the medical school would be enabled to serve their internship at the prison. Certain specialists of the faculty of medicine will be available for consultation. It is believed that the plan will provide good clinical material for medical school students.

Annual Report of Georgia Warm Springs Foundation.—A total of 541 patients from thirty-seven states received treatment during the fiscal year ended Sept. 30, 1943, according to the annual report of the foundation. The 346 patients who received financial assistance were given 25,038 hospital days care, or 79.16 per cent of the total 31,628 days hospital care given all patients. Of the 541 patients in residence during the year 261, or nearly half, were in the age group of 10 through 19 years. Of the remainder, 155 patients ranged from 20 through 38 years, 106 were under 10 years and 19 were over 39 years of age. Grants received from the National Foundation for Infantile Paralysis included $225,000 for general purposes for the year beginning Oct. 1, 1943 and $43,480 for educational purposes for the year beginning July 1, 1943. Revenue from patients and other activities at Warm Springs, plus donations and bequests, totaled $234,123.36. Excess of expenses over revenue, exclusive of grants, for the year ended Sept. 30, 1943 was $164,146.

ILLINOIS

Dr. Hullerman Joins Hospital Association.—Dr. Hugo V. Hullerman, chief of the division of maternal and child hygiene, Illinois State Department of Public Health, Springfield, has joined the American Hospital Association as secretary of the council on professional practice, which coordinates matters of a professional nature in hospitals. Hazen Dick, administrator for the Louisville General Hospital and the Waverly Hills Sanatorium, Waverly Hills, both in Kentucky, has been appointed secretary of the council on administrative practice of the American Hospital Association.

Chicago

John Zingrone Dies.—John B. Zingrone, for thirty-five years director of the x-ray department, Mercy Hospital, and associate radiologist at Loyola University School of Medicine, died May 27 at his summer home in St. Joseph, Mich.

Narcotic Violation.—Dr. Ralph W. Kirchner recently pleaded guilty in the U. S. District Court at Chicago to a violation of the federal narcotic laws. According to the federal bureau of narcotics, Dr. Kirchner was sentenced on April 4 for the infraction and placed on probation for a period of five years.

Chinese General Lectures at University.—Lieut. Gen. Robert Kho-sheng Lim lectured at the University of Chicago, May 23. His subject was "Medical Experiences in the China, Burma and India Theater of War." General Lim is chief of the supervisory and planning commission of the Chinese army medical service.

Course in Electrocardiography.—The cardiovascular department of Michael Reese Hospital announces a course in electrocardiography August 21-September 2. Emphasis in the course will be placed on chest leads and on the importance of the electrocardiogram in coronary sclerosis and myocardial infarction. The course is open to beginning and advanced students in electrocardiography. Dr. Louis N. Katz, director of the cardiovascular research, will direct the program. Additional information may be obtained from the cardiovascular department, Michael Reese Hospital, 29th Street and Ellis Avenue, Chicago 16.

MASSACHUSETTS

Changes in State Medical Board.—Dr. Abel W. Atwood, Worcester, was recently elected chairman of the state board of registration in medicine and Dr. Gerardo M. Balboni, Boston, was appointed a member.

Cutter Lecture.—Dr. Anatol A. Smorodintsev, head of the department of virus diseases at the Institute of Experimental Medicine in Leningrad, delivered the Cutter Lecture on preventive medicine at the Harvard Medical School, Boston, May 26, on "New Forms of Encephalitis in the U. S. S. R." Dr. Smorodintsev is in America as a guest of the Rockefeller Institute for Medical Research and this is his first trip to the country. He has received the Stalin Award for Distinguished Service for his work in encephalitis.

Dr. Merritt Resigns at Harvard.—Dr. H. Houston Merritt, associate professor of neurology, Harvard Medical School, and visiting neurologist at Boston City Hospital, has resigned to become chief of the division of neuropsychiatry at Montefiore Hospital for Chronic Diseases, New York, and professor of clinical neurology at Columbia University College of Physicians and Surgeons in charge of the teaching at Montefiore Hospital, effective September 1. Dr. Merritt will succeed Dr.

S. Philip Goodhart, who is retiring. Dr. Merritt, who graduated at Johns Hopkins University School of Medicine, Baltimore, in 1926, has been a member of the staff at Harvard since 1931.

MICHIGAN

Seminar in Speech Rehabilitation.—A graduate seminar in speech rehabilitation for the civilian and war injured will be offered by the department of speech at the University of Michigan Medical School, Ann Arbor, July 3-August 5. An intensive study of speech disorders resulting from war injuries will be a feature of the course.

Changes in Health Officers.—Dr. James P. Sharon, Mount Pleasant, has resigned as director of the Isabella County Health Unit to accept a position with the Mississippi State Board of Health.——Dr. Charles F. Atkinson, health officer of Missaukee, Kalhaska, Crawford and Roscommon Counties Health Unit, has been placed in charge of the Grand Traverse-Leelanau County unit, succeeding Dr. Buell H. Van Leuven, Sault Sainte Marie.

New Health Center.—The construction of a new $70,000 health center in Royal Oak is now under way. The Oakland County Health Department, which has maintained a district office in the southern part of the county for sixteen years, will occupy the new unit. The county furnished the land and office equipment, and the Federal Works Agency appropriated $87,000 to erect and equip the center. The contract was let for $70,775. Title to the property will be held by the federal government, which in turn leases it to the county for use as a health center.

Pine Crest Sanatorium Taken Over by State.—The state sanatorium commission has taken title to Pine Crest Sanatorium, Oshtemo, following authorization by the legislature. Dr. Anthony D. Calomeni, Lansing, assistant director of the bureau of tuberculosis control of the Michigan Department of Health, has been appointed medical director of the institution, which will be known as the Pine Crest State Sanatorium. The sanatorium had previously been operated as a private institution under the medical supervision of Dr. Benjamin A. Shepard, Kalamazoo, who recently retired because of ill health.

MISSOURI

New Executive Secretary for State Association.—Mr. Thomas R. O'Brien, formerly manager of the Medical-Dental Service Bureau, Inc., has been appointed executive secretary of the Missouri State Medical Association, effective June 1. Mr. O'Brien has been an insurance broker and assisted with the work of the Group Hospital Service, Inc., St. Louis.

Pioneers of American Medicine.—The Jackson County Medical Society sponsored a meeting on May 24 to display a group of portraits executed by Dean Cornwell depicting "Pioneers of American Medicine." Among the speakers were Miss Ethlyne Jackson, acting director of the William Rockhill Nelson Gallery of Art, on "The Exhibit from the Viewpoint of the Art Critic" and Dr. Logan Clendening, Kansas City, "American Medicine in the Making." Another feature of the meeting was a display of historical objects from the collection of Dr. Clendening.

NEW JERSEY

State Medical Election.—Dr. Samuel Alexander, Park Ridge, was chosen president-elect of the Medical Society of New Jersey at its annual meeting in Atlantic City, April 26. Dr. Joseph F. Londrigan, Hoboken, was installed as president. Dr. Alfred Stahl, Newark, is secretary and Edith L. Madden acting executive officer. The 1945 session will be held in May in Atlantic City.

Industrial Meeting.—The New Jersey Association of Industrial Physicians will meet at the Academy of Medicine of Northern New Jersey, Newark, June 30. Included among the speakers will be:

Dr. Edgar E. Evans, Penns Grove, Hydrofluoric Acid Burns and Their Treatment.
Dr. Augustus Gibson, Montclair, Methyl Bromide Burns and Their Treatment.
Dr. James M. Carlisle, Westfield, Penicillin and Streptothricin in the Treatment of Industrial Injuries.
Dr. Frederick Parker Willey, Newark, Rehabilitation of Returned Servicemen.

Doctor Donohoe Honored.—The board of directors of the Bayonne Hospital and Dispensary, Bayonne, held a dinner recently in honor of Dr. Lucius F. Donohoe in recognition of his fiftieth anniversary as a member of the staff of the hospital. Dr. Donohoe was elected to the medical staff in 1894, appointed visiting surgeon in 1896, elected president of the medical staff and a member of the board of directors in 1917, appointed chairman of the building committee in 1926 and elected medical director in 1927. Dr. Donohoe has served as president of the Bayonne and the Hudson County medical society and of the Medical Society of New Jersey.

State Board Endorses Change in Licensure Requirements.—On April 19 the state board of medical examiners approved an amendment to its statutes to provide that, in the board's discretion during the present war and for a period of three months after its cessation, an applicant for license to practice medicine and surgery in the state will be acceptable who has completed not less than nine months' internship in a hospital approved by the board. The state board rules relating to the certification of prospective interns to the approved hospitals situated in New Jersey was also amended, making it no longer mandatory for such interns to make application for a certificate to commence internship.

NEW YORK

Alpha Omega Alpha Lecture.—Dr. Louis S. Goodman, professor of pharmacology and physiology at the University of Vermont College of Medicine, Burlington, delivered the annual Alpha Omega Alpha lecture at the Syracuse University College of Medicine, Syracuse, May 17, on "Some Aspects of Recent Advances in Pharmacology."

Dr. Barrera Named Professor of Neurology and Psychiatry at Albany.—Dr. S. Eugene Barrera, principal research psychiatrist, New York State Psychiatric Institute and Hospital, has been appointed professor of neurology and psychiatry at Albany Medical College and psychiatrist in chief and neurologist at Albany Hospital. He succeeds Dr. D. Ewen Cameron, who went to Montreal to become director of the new Allan Memorial Institute of Psychiatry at McGill University (THE JOURNAL, Nov. 20, 1943, p. 783). Dr. Barrera graduated at Columbia University College of Physicians and Surgeons in 1929.

Pharmacist Sentenced for Sale of Pentobarbital.—Murray Steir, pharmacist, on May 15 was sentenced to an indeterminate penitentiary term up to three years for selling to a girl agent of the health department sixteen sodium pentobarbital capsules without a physician's prescription. According to the New York *Times*, presiding Justice Irving Ben Cooper had voted for a less severe sentence, a $500 fine and a suspended six month workhouse term. He said that he did not consider sodium pentobarbital as dangerous and habit forming as heroin, morphine and other such drugs. But Justice Frederick L. Hackenburg, who imposed the sentence, stated that sodium pentobarbital "today is taking the place of the heroin which was smuggled into this country by the imperial Japanese government." In explaining what, the *Times* said, was the severest sentence ever imposed for the offense of drug selling, Justice Hackenburg stated that Steir, who had pleaded guilty to a violation of the sanitary code in the sale of the capsules, "was found to have disposed of more than fifty thousand of these capsules in the three years before his arrest last February." A health department inspector had testified that the girl agent had bought sixteen capsules known as "goof pills." It was stated that complaints had been received on Steir's enormous traffic in the "goof pills" from federal and state hospital authorities and the local narcotics bureau, and information given by hospitalized addicts led "right into his store." His books, however, contained no mention of the disposition of the fifty thousand "goof pills," it was stated.

New York City

Unprecedented License Revocation in "Kickback" Cases.—The licenses of 9 Brooklyn physicians to treat compensation cases were revoked June 3 and 263 others were suspended for periods ranging from one month to two years in what the New York *Times* stated was a "collective action unprecedented in the annals of the New York state workmen's compensation law." Five roentgenologists were included among the suspensions. Official reprimands were given to 72 other physicians in the borough. The penalties became effective May 31. All the physicians are eligible to appeal the decision, it was stated. Industrial Commissioner Edward Corsi of the state labor department is reported to have said that the disciplinary action was based on recommendations of the compensation board of the Medical Society of the County of Kings, which heard charges against more than 1,000 Brooklyn physicians accused of accepting "kickbacks" ranging from $1 to as high as $1,127 over a single period of twelve months.

Similar penalties against physicians in Manhattan, the Bronx, Queens and Westchester County are to be imposed, it was stated. The nine physicians whose licenses to treat workmen's compensation cases have been revoked are Drs. David G. Arenson, Murray W. Arenson, Frank P. Calabro, Frank Crimaldi, Michael S. Distefano, G. Thomas J. Grieco Jr., Marks J. Rosen, Nathan Brumer and John Landberg.

Boric Acid Labeling Changed.—On May 31 the New York City Board of Health amended the sanitary code sections pertaining to drugs by adding a new section, effective June 15, requiring that the labels on boric acid in the form of powder, crystals or solutions shall contain the warning "Caution—not for internal use except as a mouth wash, eye wash or douche." In taking this action the board pointed out that since 1933 the sanitary code of the city of New York has contained section 220, which provides in part that all boric acid powder and solution not stored or kept in the pharmacy of a hospital shall be stored or kept in a medicine cabinet under lock or key especially provided for the purpose. Section 220 was adopted after a boric acid accident occurred in 1933 in one of the city hospitals. In announcing the action on the labeling of boric acid, the board further stated that boric acid was not labeled as a poison because "poison" might decrease the precautionary significance of the "poison label" on certain other very dangerous preparations found in homes such as mercury bichloride, lye and insecticides. Boric acid cannot be classified as coming within this category of toxic substances. It states that "no person shall sell, offer for sale, give away, deal in, or supply, or have in his or her possession with intent to sell, offer for sale, give away, deal in, or supply, any boric acid in the form of powder, crystals or solutions unless the container thereof bears a label with the words, 'boric acid,' and the following warning, legibly and conspicuously printed thereon: 'Caution—not for internal use except as a mouth wash, eye wash or douche.'" THE JOURNAL, May 13, page 161, in announcing another regulation adopted by the New York City Department of Health concerning boric acid solution, erroneously reported that the step had been taken by the state department of health. A report received June 8 states that the regulation concerning the coloring of boric acid was not adopted as such but was issued in the form of an order covering hospitals within the jurisdiction of the city department of hospitals.

OHIO

Conference on Conservation, Nutrition and Human Health.—The third annual conference on conservation, nutrition and human health will be held at the conservation laboratory, Conotton, June 24-25. Among the speakers will be:

Dr. Charles A. Doan, Columbus, The Role of Iron in Nutrition.
Dr. Julian D. Boyd, Iowa City, Your Teeth and Your Diet.
William A. Albrecht, Ph.D., Columbia, Mo., Soil Fertility and National Nutrition.
John D. Detwiler, Ph.D., London, Ont., Canada's Major Conservation Problems.
Dr. Jonathan Forman, Columbus, Current Thinking on Nutrition.

PENNSYLVANIA

District Meeting.—A combined meeting of the third, fourth and twelfth councilor districts of the Medical Society of the State of Pennsylvania was held at the Hotel Altamont, Hazleton, June 7. Among the speakers were:

Dr. Francis F. Borzell, Philadelphia, Aims of the Council on Medical Service and Public Relations.
Lieut. Col. Leon S. Eagleburger, M. C., Early Medical Experiences in New Guinea.
Dr. Harold W. Brown, New York, Filariasis.
Major Arthur Heyman, M. C., Virus Pneumonia.
Dr. Walter F. Donaldson, Pittsburgh, The Duty of the Individual Physician Toward Organized Medicine.

A feature of the meeting was the presentation of fifty year testimonials to members of the state society.

Philadelphia

New Chief of Communicable Diseases.—Dr. Angelo M. Perri was recently appointed chief of the division of communicable diseases of the Philadelphia Department of Public Health.

Strittmatter Award Goes to Dr. Strecker.—Dr. Edward A. Strecker, professor of psychiatry and chairman of the department, University of Pennsylvania School of Medicine, on May 24 received the Dr. I. P. Strittmatter Award of the Philadelphia County Medical Society "in recognition of his distinguished service in the field of psychiatry and mental hygiene and his unselfish devotion to the highest ideals of the profsesion as physician, teacher, author and consultant in civilian and military medicine." The presentation was made by Dr. J. Parsons Schaeffer, chairman of the award committee.

SOUTH CAROLINA

Ten Point Program Begins.—Funds are now being collected to launch the "ten point program" sponsored by the South Carolina Medical Association and approved at its recent annual meeting. Members of the society are being solicited to obtain funds to assist in the employment of an executive secretary to handle the details. Intended to raise the level of medical care for all people of South Carolina and keep the practice of medicine in the hands of the medical profession, the program is presented as follows:

1. **Cooperation:** To promote closer cooperation and better understanding between all groups and individuals concerned with providing and improving medical care for the people of South Carolina.
2. **Political Control:** To prevent political control or domination of medical practice or of medical education.
3. **Study:** To assemble and to amplify studies relative to the need and availability of medical care in each county of the state and in the state at large, and to publicize these findings; To study all agencies in the state which are involved in the administration of medical care as to the type of work which they are doing and the effectiveness of the work which is being done; To promote plans for providing or improving medical care where there is a need.
4. **Care of Indigent:** To prepare a uniform plan for the hospital care of the indigent, financed by public county funds, which may be used by individual counties or by groups of counties for their indigent sick, and to promote the general adoption of such a plan; To promote the establishments of clinics in each county for the indigent ambulatory patients, financed by public county funds and operated or supervised by established hospitals or by the county medical society.
5. **Hospital Insurance:** To make voluntary hospital insurance available to all the people of the state and to promote the widespread purchase of such insurance.
6. **Hospitals:** To study the present availability and facilities of hospitals in the state and to promote the establishment of well equipped and adequately staffed hospitals in needy areas; To establish through the state medical association standards for hospitals in South Carolina and to make public the names of those hospitals which meet these standards.
7. **Group Health Insurance:** To promote the establishment of group health insurance plans in all industries, large and small, in South Carolina.
8. **Standards for Insurance:** To establish standards for insurance companies selling hospital or group health insurance in South Carolina and to publish the names of those who meet these standards.
9. **Medical and Nursing Education:** To promote the securing of adequate funds and facilities for the operation of the Medical College of the State of South Carolina, Charleston; To promote advancement in nursing education and nursing care in the state; To promote the establishment of a loan fund whereby worthy young men and women of the state who are financially unable to meet the strain of a medical education may be able to secure aid.
10. **Education of the Public:** To acquaint the citizens of the state with regard to the agencies and facilities in the fields of medical care, public health, hospital and industrial insurance, and to encourage the people to use them on a much greater scale.

When employed, the executive secretary will devote his entire time to the management of the "ten point program," assembling data, making studies and arranging conferences which concern the individual points of the plan.

GENERAL

Sterling Drug Acquires Stearns and Company.—Sterling Drug, Inc., on May 31 acquired the assets, business and good will of Frederick Stearns and Company, pharmaceutical manufacturers, when directors of the latter company voted on June 30 to retire its preferred stock. According to an announcement the Stearns common stockholders are expected in June to approve the reorganization of the company as well as other details of the transaction. It was stated that the Detroit pharmaceutical house would become a division of Sterling Drug, Inc., with no change of management or personnel contemplated.

Dr. Goodpasture Receives Kober Medal.—Dr. Ernest W. Goodpasture, professor of pathology and associate dean, Vanderbilt University School of Medicine, Nashville, Tenn., was presented with the Kober Medal during the annual meeting of the Association of American Physicians in Atlantic City, May 9. The award is presented annually to a member of the association for notable contributions to the progress and achievements of preventive medicine. Dr. Goodpasture's work has included experiments using the developed egg as a medium for the growth of viruses and bacteria and research in virus diseases; also he demonstrated the cause of mumps and has done important work in typhoid.

Conference of Medical Missionaries.—The fourteenth annual Conference of Medical Missionaries (physicians and nurses) is being held at McCormick Theological Seminary, Halsted Street and Fullerton Avenue, Chicago, June 17-19, under the auspices of the Christian Medical Council for Overseas Work, a committee of the Foreign Missions Conference of North America. On June 16 the program included a tour

of the Wesley Hospital, reports from the Far East and a discussion of photography as a promotional technic. On June 17 topics for discussion included the church faces a new age, bases of cooperation with governments in medical work, union in medical and nursing education and reports from Latin America. Subjects on June 18 will include medical and public health training for nonmedical missionaries and biblical and theological courses for medical missionaries. On June 19 the subject will be bases of interdenominational cooperation in medical work.

Association of Internal Secretions Presents Prizes.—At the annual banquet of the Association for the Study of Internal Secretions in the Stevens Hotel, Chicago, June 12, the Squibb Award was presented to Edward A. Doisy, Ph.D., professor and director of the department of biochemistry at the St. Louis University School of Medicine, for his many contributions to scientific knowledge, particularly in endocrinology. The award was established by E. R. Squibb and Sons in 1940 to stimulate research in endocrinology. Dr. Doisy's first contribution to the field was concerned with the purification of insulin, but his most widely known work is on the estrogens. He and his associates were the first to separate a pure estrogen, theelin, from human pregnancy urine. The first Ciba Award made by the Ciba Pharmaceutical Company was also presented at the banquet to Dr. Edwin B. Astwood, assistant professor of pharmacotherapy, Harvard Medical School, Boston. Dr. Astwood has made important contributions in the field of sex hormones and the development of the breast and recently has been studying the effect of thiourea and thiouracil on the thyroid gland. The Ciba Award, which was established in 1943 by the Ciba Pharmaceutical Company, is to be presented annually to an investigator of not more than 35 years of age for notable research in the field of endocrinology.

Foundation for Pharmaceutical Education.—The American Foundation for Pharmaceutical Education, which was incorporated in 1943, recently announced its second grant of $26,000 to supplement a similar grant during the academic year 1943-1944. In addition, $100,000 has been made available to help some accredited colleges of pharmacy now having serious financial difficulties on account of the shortages of students due to the war. In January the foundation brought out its *Pharmacy Foundation News Bulletin*, the format of which is made up in newspaper style. The foundation was established to assist in fostering the continuation of pharmaceutical education. It was sponsored by the National Drug Trade Conference in recognition of the importance of pharmaceutical education to the manufacturing industry, the distributive drug trade and all public health services. Its members include the American Association of Colleges of Pharmacy, the American Drug Manufacturers' Association, the American Pharmaceutical Association, the American Pharmaceutical Manufacturers' Association, the Federal Wholesale Druggists' Association, the National Association of Boards of Pharmacy, the National Association of Retail Druggists, the National Wholesale Druggists' Association, the Proprietary Association of America and the National Association of Chain Drug Stores. Officers of the foundation, which has its offices at 330 West 42d Street, New York 18, include George V. Doerr, New York, president, Charles S. Beardsley, Elkhart, Ind., vice president, Edwin L. Newcomb, Montclair, N. J., secretary, and Sydnor B. Penick Sr., Montclair, treasurer.

Annual Report of National Foundation.—According to the annual report of the National Foundation for Infantile Paralysis for the year ended Sept. 30, 1943 grants and appropriations totaling $1,278,836 were made in five main categories: virus research, after-effects research, education, medical publications, and epidemics and public health. General administrative expenses of the National Foundation for the year totaled $84,970. The report contains a review of the foundation's support of the Kenny method of after-effects treatment even before the arrival of Sister Kenny in this country. The foundation has also spent more than $500,000 in testing and evaluating the Kenny method and training doctors, nurses and physical therapy technicians in the method. A total of $107,000 was expended in 1943 at the University of Minnesota alone, where the evaluation of the method was first undertaken under the auspices of the foundation. Since the first course in the Kenny treatment was given there in March 1942 more than 900 doctors, nurses and physical therapy technicians have been instructed and trained in the method at this center, where the National Foundation is still financing the work. The foundation also opened other centers for the teaching of this method at institutions in California, Illinois, Indiana, Georgia, Pennsylvania and New York, and the grants to these institutions have totaled $140,000 in addition to the Minnesota grants. A total of $54,000 has been expended by the National Foundation for scholarships, wool for treatment, distribution of literature, exhibits and demonstrations of the Kenny method. In addition, local chapters of the National Foundation throughout the nation have spent at least $200,000 in furnishing scholarships for doctors, nurses and physical therapy technicians at these institutions. The report, which deplores a popular misconception that the Kenny treatment is "a miraculous cure," points out that the National Foundation's program for advancing knowledge of the Kenny treatment had resulted in "several thousands" of doctors, nurses and technicians being acquainted with the method by midsummer of 1943, when this country experienced its third largest epidemic. Recently the foundation made a five year grant of $175,000 to the University of Minnesota to study the physiologic problems concerned with the mechanism of the disease process and methods of treatment of infantile paralysis.

FOREIGN

Appointments at Edinburgh.—Dr. F. A. E. Crew, who is a brigadier in the army medical service and acting as director of biologic research at the war office, has been appointed to the Bruce and John Usher chair of public health at the University of Edinburgh. He succeeds Percy S. Lelean, D.P.H., retired. Before entering army service Dr. Crew was Buchanan professor of animal genetics at Edinburgh University.

Personal.—Dr. Chi-chung Yen, Nanking, who recently resigned as head of the department of health service in the National Health Administration on account of ill health, is now doing part time teaching in the department of public health in National Central University College of Medicine in Chengtu, according to the *Chinese Medical Journal*.——Sir Henry H. Dale, president of the Royal Society, London, is the chairman of the British Penicillin Committee.——Dr. James M. Mackintosh, University of London, has been appointed to the chair of public health, tenable at the London School of Hygiene and Tropical Medicine; the appointment will be effective October 1.

Pharmacy Medal Awarded.—Arthur Stoll, Basel, Switzerland, has been awarded the Flückiger Gold Medal in recognition of his achievements in the field of pharmacy. He has also been awarded the Marcel Benoist Prize for 1942 of the Marcel Benoist Foundation for the furthering of scientific research for his "outstanding contributions to pharmaceutical chemistry, particularly the isolation and synthesis of pure active principles of drugs" (THE JOURNAL, June 19, 1943, p. 554). The Flückiger medal is the highest Swiss award for research work in pharmaceutical science and is bestowed every five years. The Benoist prize, also awarded every five years to a citizen of Switzerland or to an investigator having resided at least five years in that country, is given for a "scientific achievement or study which is of importance to human life."

Warrington Yorke Memorial Fund.—The Liverpool School of Tropical Medicine recently created a chemotherapeutic research department to carry on the work of the late Dr. Warrington Yorke, Alfred Jones professor of tropical medicine at the university. To this end a Warrington Yorke Memorial Fund has been opened and subscriptions will be acceptable from colleagues, friends and former students. Contributions should be sent to the Honorary Treasurer, Liverpool School of Tropical Medicine, the Chamber of Commerce, 1, Old Hall Street, Liverpool. Dr. Yorke had carried on original work on trypanosomiasis, blackwater fever, the nematode parasites and many other parasitic and tropical diseases. At the time of his death advanced studies in chemotherapy had been initiated by him, and it was his intention to promote chemotherapeutic research in Great Britain and to establish Liverpool as one of its leading centers.

Study of the Aged.—The Nuffield Foundation Trustees are making a survey of the problems of aging and the care of old people, *Science* reports. The study will receive the cooperation of the British Ministry of Health and the Assistance Board, and its objectives are to collect and collate as much information as possible with regard to the problems, individual, social and medical, associated with aging and old age; the work being done by public authorities and voluntary organizations, and the public and private resources that exist for the care and comfort of old people in Great Britain, and the provision made for old people in those countries which have given special consideration to these problems; medical research on the causes and results of aging, and on the lines on which action might usefully be taken in the future by public authorities and private organizations, including the foundation. B. Seebohm Rowntree, LL.D., chairman of Rowntree and Company, Ltd., London, is chairman of the survey committee.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 13, 1944.

Birth Rate Highest in Eighteen Years

The remarkable fact that during our greatest war our vital statistics have improved has been reported in previous letters. The registrar general's returns for 1943, just published, show that the improvement in our vital statistics continues. In England and Wales there was in 1943 an excess of live births over deaths amounting to 181,127, an increase over the 173,902 for 1942 and a greater increase over the average annual increase for the years 1937-1941 of 88,036. The birth rate for 1943 was 0.7 per thousand above that for 1942 and the highest recorded since 1928. Infant mortality was the lowest on record and 0.2 per thousand lower than that for 1942, the previous low. The proportion of stillbirths to total births was the lowest on record.

For the first time, "effective reproduction rates" for the eleven years 1933-1943 appear in the official figures. These rates differ slightly from the "net reproduction rate," the great advance of Dr. R. R. Kuczinski. He defined this rate as the average number of children who will be born to each newborn baby if the present birth and death rates continue. If this rate is unity, the population is exactly reproducing itself. For 1935 it was 0.75, which, if continued, meant a reduction of population to three fourths of its present size in the next generation. The new "effective reproduction rate" is also based on actual fertility but makes allowance for a continuing improvement in survivorship conditions. It is considered a reasonably accurate index of replacement trends in spite of the element of conjecture. From the low point of 0.747 in 1933 it rose to 0.810 in 1938 but fell to 0.761 in 1941 and rose again to 0.853 in 1942 and (provisionally) to 0.903 in 1943. If the last figure is verified, for the first time in twenty years our reproductive effort has amounted to nine tenths of that required for replacement. The high rate must be connected with the marriage boom following the outbreak of war and now over. This was due to disappearance of unemployment and the war allowances payable for wife and children. The number of marriages in the prewar year of 1938 was 361,768. It rose to 470,549 in 1940 but fell to 295,414 in 1943. However, births in that year were the highest since 1928. It will be seen that the maintenance of our population is still a matter of concern.

Deceiving the Radiologist: A New Form of Malingering

In a communication to the *British Medical Journal* a surgeon, Mr. McNeill Love, tells the story of a man referred to him with probable gastric ulcer. His symptoms were vague, and physical examination revealed nothing abnormal. The x-ray report stated that there was a persistent filling defect in the prepyloric region, the diagnosis being a prepyloric polypus. Mr. Love was about to write a medical report to this effect when a "friend" of the patient, by an indirect route, gave him away. He had secreted chewing gum in his teeth, which was dislodged by the tongue as he swallowed the bismuth meal. This seemed a possible explanation of the filling defect, and a control radiologic examination a few days later showed nothing abnormal. Either the patient failed to replenish his supply of gum or, if a pledget had been swallowed, it successfully negotiated the pylorus. Anyway, Mr. Love was able to give —to the disappointment of the patient—a report that no gastric abnormality was evident. Having recently encountered a similar case, Mr. Love suggests that this method of confusing the radiologist, and thereby the surgeon, may be more familiar to certain sections of the public than to the medical profession.

University Center for Ophthalmic Research

The lord mayor of London gave a luncheon at the Mansion House to promote a plan to establish at Oxford University a center of research and postgraduate study for the prevention of blindness and the better treatment of eye disease. Sir David Ross, vice chancellor of Oxford University, said that much less had been done to prevent blindness than to take care of the blind. The number of the blind was not decreasing in spite of all the efforts of medical science, he said. Three things were needed—improvement of ophthalmic services throughout the country, education of the public in the care of the eyes and research into eye disease. Research could be most effectively pursued, he thought, not in an isolated ophthalmic institute but in a university, where the workers could be in close contact with workers in kindred subjects. We were finding more and more that specialists in one subject could profit from cooperation with specialists in others, Sir David pointed out. It is known, for instance, that many defects of sight were due to nutritional factors, that ocular symptoms were sometimes the first indication of disease in another part of the body and that new drugs, such as the sulfonamides and penicillin, were effective in eye diseases.

Toxic Effects of Tannic Acid Used in the Treatment of Burns

The *Army Medical Bulletin* supports the decision to abandon the regular use of tannic acid in the treatment of burns, which recently was much in vogue, in favor of bland preparations of triple dye or sulfonamides, because of observations made a short time back on the toxicity of tannic acid. Direct evidence has been obtained that tannic acid can produce necrosis of the central zone of the liver lobules in animals, and that it can be absorbed in toxic amounts when applied to extensive burns. Severe liver necrosis has also been found in human subjects dying of burns. In a series of necropsies, which included burns treated with tannic acid and others not treated with it, liver necrosis was found in over half the tanned patients and in none of the untanned. It has been shown that repair of the necrotic areas can occur rapidly when the drug is stopped. But there is no reason for hesitating to apply tannic acid as a first aid measure to small burns under circumstances in which immediate treatment is called for and nothing else is available.

Otologic Research

By arrangement with the Medical Research Council an otologic research unit has been established at the National Hospital for Nervous Diseases in London. It is to be maintained jointly by the council and the hospital, as in the case of the existing neurologic research unit. The director is Dr. C. S. Hallpike, a full time member of the council's scientific staff and aural physician to the hospital. The council has also appointed three new committees to advise and assist in promoting a general program of research work in problems of deafness.

Marriages

ELLARD MELTON YOW, Henderson, N. C., to DR. MARTHA OUZTS DUKES of Winston-Salem, May 20.

RALPH L. WHITLEY, Osage, Iowa, to Mrs. Grace Foreman Lowe of Grand Rapids, Mich., April 22.

HAROLD L. HEIGES, Biglerville, Pa., to Miss Helen Kathryn Palmer of Washington, D. C., April 12.

JACOB ROSENWASSER, Mishawaka, Ind., to Miss Dorothy Keinigsberg of Chicago, February 27.

HENRY FREDERICK BARGE to Miss Nancy Goodrich Tiger, both of Rochester, N. Y., May 27.

LEO A. HOFFMANN, Campbellsport, Wis., to Miss Malinda Haack of Milwaukee, April 11.

Deaths

Stephen A. Douglas Malloy, Yanceyville, N. C.; Kentucky School of Medicine, Louisville, 1897; honorary member of the Medical Society of the State of North Carolina; for many years on the district school committee; medical examiner on the county draft board during World War I; chairman of the county Democratic executive committee for twenty years; for many years coroner of Caswell County and superintendent of the country board of health; a member of the Rotary Club, which in December 1943 presented him with a trophy naming him as "the outstanding citizen of Yanceyville" and "the first citizen of Caswell County"; died in the Memorial Hospital, Danville, March 31, aged 71, of general peritonitis.

Eugene Henry Dickenshied, Allentown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1881; member of the Medical Society of the State of Pennsylvania; past president of the Lehigh County Medical Society; health officer of Lehigh County from 1935 to 1939 and formerly city health officer; major, National Guard, retired; for many years a member of the U. S. Board of Pension Examiners of Lehigh County; for twenty-one years in charge of the hospital of the American Steel and Wire Company Plant; served as member and president of the school board; consulting surgeon at the Sacred Heart Hospital, where he died April 16, aged 84, of arteriosclerosis.

Milton Homer Bachman ✙ Youngstown, Ohio; Jefferson Medical College of Philadelphia, 1906; specialist certified by the American Board of Radiology, Inc.; delegate to the International Congress of Radiology at Stockholm, Sweden, in 1928; member of the Radiological Society of North America, Inc., and the American College of Radiology; served with Base Hospital number 52, American Expeditionary Forces, during World War I; formerly on the staff of the McKeesport Hospital, McKeesport, Pa.; died in the North Side Unit of the Youngstown Hospital April 14, aged 59, of carcinoma of the colon.

Edward Lysander Frost ✙ Buffalo; University of Buffalo School of Medicine, 1892; an Affiliate Fellow of the American Medical Association; formerly instructor in obstetrics at his alma mater; one of the organizers of the Lafayette General Hospital; on the staff of the Millard Fillmore Hospital; at one time coroner of Erie County; for many years attending physician for the Erie County Penitentiary; served on a draft board until commissioned a first lieutenant in the medical corps of the U. S. Army during World War I; died April 22, aged 79, of cerebral hemorrhage.

Adelaide Ward Peckham, East Orange, N. J.; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1886; Woman's Medical College of Pennsylvania, Philadelphia, 1902; at one time a school teacher in New York; once emeritus professor of bacteriology at the Woman's Medical College of Pennsylvania, Philadelphia; served as superintendent of the laboratory at the Hospital of the Woman's College of Pennsylvania; died in the Parkview Nursing Home, Bloomfield, May 13, aged 96, of carcinoma of the head of the pancreas.

Henry August Aschauer, Buffalo Hart, Ill.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; member of the Illinois State Medical Society; died April 10, aged 61, of heart disease.

Fred A. Bartlett, Aurora, Ill.; Hahnemann Medical College and Hospital, Chicago, 1897; died in St. Joseph's Hospital April 26, aged 67, of carcinoma of the intestines.

Edgar S. Bell ✙ Chicago; Rush Medical College, Chicago, 1896; died in the Michael Reese Hospital April 17, aged 75, of a ruptured appendix.

Winfield Sloane Bell ✙ Latrobe, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1917; served during World War I; Latrobe school medical examiner; anesthetist on the staff of the Latrobe Hospital, where he died April 1, aged 51, of coronary thrombosis.

Harry Howard Bolton Jr. ✙ Hilliard, Fla.; Atlanta Medical College, 1914; member of the West Virginia State Medical Association; served during World War I; formerly medical director for Davis Coal and Coke Company at Pierce and Thomas, W. Va.; died April 22, aged 56, of carcinoma.

Harry Cox Brown, Danville, Pa.; Jefferson Medical College of Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; served during World War I; assistant physician at the Danville State Hospital; died April 2, aged 74, of lobar pneumonia and chronic myocarditis.

John William Campbell, Fargo, N. D.; Rush Medical College, Chicago, 1897; died April 13, aged 74, of heart disease.

Oscar Orville Carpenter, Sully, Iowa; Drake University Medical Department, Des Moines, 1894; on the staffs of the Mary Frances Skiff Memorial Hospital, Newton, and the Mercy Hospital, Oskaloosa, where he died March 9, aged 77, of carcinoma of the prostate.

Andrew Christensen ✙ Chicago; Jenner Medical College, Chicago, 1901; died in the Swedish Covenant Hospital April 5, aged 82, of acute myelogenous leukemia and chronic cholecystitis.

Carl William Cohoon ✙ Bay Shore, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1924; specialist certified by the American Board of Radiology, Inc.; member of the Radiological Society of North America, Inc., and the American College of Radiology; served with the Canadian Artillery during World War I; on the staffs of the Brunswick Home, Amityville, Mather Memorial Hospital, Port Jefferson, and the Southside Hospital; died April 9, aged 46, of coronary occlusion.

Henry Cook, Fowler, Mich.; Detroit College of Medicine, 1900; past president of the Clinton County Medical Society; on the staff of the Clinton Memorial Hospital, St. Johns; director of the Fowler State Savings Bank; died April 9, aged 69, of coronary thrombosis.

Milo A. Crane, Elmhurst, Ill.; Detroit College of Medicine, 1907; died in a hospital at Madisonville, Ky., April 7, aged 70, of injuries received in an automobile accident.

Harley Layton Cunningham, Ashley, Ind.; Michigan College of Medicine and Surgery, Detroit, 1894; died in the Sacred Heart Hospital, Garrett, April 11, aged 82, of a self-inflicted bullet wound.

Albert Alonzo Davidson ✙ Augusta, Ga.; University of Nashville (Tenn.) Medical Department, 1893; Vanderbilt University School of Medicine, Nashville, 1893; associate professor of clinical medicine at the University of Georgia School of Medicine; on the staff of the University Hospital; died March 19, aged 70, of carcinoma of the stomach.

Otto Darwin Diehl, Centralia, Ill.; Marion-Sims College of Medicine, St. Louis, 1899; member of the Illinois State Medical Society; district surgeon, Illinois Central Railroad; on the staff of St. Mary's Hospital; died April 17, aged 68, of coronary thrombosis.

Abraham Dungyersky, Chicago; Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest, Hungary, 1919; died April 9, aged 54, of heart disease.

William W. Eley, Biloxi, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1901; member of the Mississippi State Medical Association; on the staff of the Biloxi Hospital; died April 5, aged 69, of a self-inflicted bullet wound.

William J. Elliott, Dawson, Iowa; Keokuk Medical College, 1898; died in Kellogg March 22, aged 81, of arteriosclerosis and a fractured hip received in a fall.

George Thomas Field, Chase, Mich.; Homeopathic Hospital College, Cleveland, 1878; for many years a member of the U. S. Pension Examining Board; served as local surgeon for the Pere Marquette Railway; died April 20, aged 88, of carcinoma.

Albert E. Fritze, Chester, Ill.; Homeopathic Medical College of Missouri, St. Louis, 1885; member of the Illinois State Medical Society and of its "Fifty Year Club"; served as a member of the city board of health and for many years as a member of the local board of education; formerly mayor of Chester; died April 6, aged 83, of senility.

Columbus Edgar Gannaway, Warren, Ark.; Arkansas Industrial University Medical Department, Little Rock, 1890; member of the Arkansas Medical Society; died March 5, aged 77, of carcinoma of the neck.

William Henry Gaul ✙ Yonkers, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1913; fellow of the American College of Surgeons; also a pharmacist; surgeon of the city fire department; served during World War I; on the staff of the Moses-Ludington Hospital, Ticonderoga; on the staff and formerly president of the board of Yonkers General Hospital, where he died April 8, aged 59, of heart disease.

Bernard Gordon, Flushing, N. Y.; University of the City of New York Medical Department, 1885; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany,

1887; formerly affiliated with the New York Post-Graduate, Beth Israel and People's hospitals, New York; died April 13, aged 81, of angina pectoris.

Jacob E. Helwig, North Tonawanda, N. Y.; University of Buffalo School of Medicine, 1890; member of the Medical Society of the State of New York; served as county coroner; since 1904 health officer of the town of Pendleton, Niagara County; on the staff of the De Graff Memorial Hospital; died April 7, aged 81, of angina pectoris.

Everett William Henry ✙ Niagara Falls, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1923; served with the Canadian Army in Mesopotamia in the early part of World War I and later transferred to the Royal Naval Air Service as a flight instructor; formerly on the staff of the Lying-In Hospital, New York; died March 30, aged 48, of chronic sinusitis and hypostatic pneumonia.

Alton James Higgins ✙ Elgin, Ill.; Illinois Medical College, Chicago, 1908; on the courtesy staff of the Sherman Hospital, where he died April 3, aged 73, of cerebral hemorrhage and essential hypertension.

James Crittendon Hill, Knoxville, Tenn.; Tennessee Medical College, Knoxville, 1900; died April 2, aged 70, of heart disease.

John W. Hinton Jr., Atlanta, Ga.; Atlanta Medical College, 1892; died April 10, aged 73, of coronary thrombosis.

Levin Monroe Irving ✙ Silver Spring, Md.; Baltimore University School of Medicine, 1896; contract surgeon for the National Guard; medical examiner for the Metropolitan and Equitable Life Insurance companies; died in the Suburban Hospital, Bethesda, April 12, aged 68, of coronary occlusion.

Harry Morgan Ivins, Santa Cruz, Calif.; State University of Iowa College of Medicine, Iowa City, 1908; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology and the Iowa State Medical Society; served on the staffs of the Mercy and St. Luke's Methodist hospitals, Cedar Rapids, Iowa; died March 21, aged 65, of cerebral hemorrhage and hypertension.

Joseph Hector Jacques, Fitchburg, Mass.; Harvard Medical School, Boston, 1910; member of the Massachusetts Medical Society; examiner for the Metropolitan Life Insurance Company; on the staff of the Burbank Hospital; died April 15, aged 68, of coronary thrombosis.

Russell Conrad Johnson ✙ Berwyn, Ill.; Rush Medical College, Chicago, 1917; on the staff of the MacNeal Memorial Hospital, where he died April 10, aged 52, of coronary thrombosis.

John Paul Jones, Savannah, Ga.; Emory University School of Medicine, Atlanta, 1915; member of the Medical Association of Georgia; fellow of the American College of Surgeons; served during World War I; on the staff of St. Joseph's Hospital, where he died April 10, aged 55, of coronary occlusion.

James Kay ✙ Philadelphia; Jefferson Medical College of Philadelphia, 1914; clinical professor of medicine at the Temple University School of Medicine; member of the College of Physicians, Philadelphia; physician to the Kensington Hospital for Women; died April 21, aged 53, of coronary disease.

Arthur Ralph Keirn ✙ Dalton, Ohio; Western Reserve University School of Medicine, Cleveland, 1932; member of the school board, park board and the Rotary Club; on the staff of the Massillon City Hospital, Massillon, where he died April 19, aged 37, of cerebral hemorrhage and heart disease.

Archibald Kenton Kessler, Huntington, W. Va.; University of Louisville (Ky.) Medical Department, 1891; member of the West Virginia State Medical Association; past president of the Cabell County Medical Society; formerly physician in charge of the Kessler Hospital and Sanitarium, now known as the Huntington Memorial Hospital, where he died April 12, aged 76, of heart disease.

Albert Wiley Kime, Cottage Grove, Ore.; University of Oregon Medical School, Portland, 1897; at one time a druggist; served as councilman, mayor and member of the school board; for many years health officer; formerly councilman and mayor of Bandon; on the staff of the Eugene Hospital, Eugene; died April 1, aged 85, of coronary occlusion.

David Leighton Kinsolving ✙ Abingdon, Va.; University College of Medicine, Richmond, 1896; served during World War I; secretary of the Washington County Board of Health and county physician for many years; died in the University of Virginia Hospital, Charlottesville, March 12, aged 77, of cerebral hemorrhage and acute myelogenous leukemia.

Walter E. Lilley, Merced, Calif.; Baltimore Medical College, 1894; member of the California Medical Association; coroner of Merced County; served as county health officer; died March 30, aged 75, of angina pectoris.

Clarence Howard Mason, Cincinnati; Miami Medical College, Cincinnati, 1896; member of the Ohio State Medical Association; died in the Christ Hospital March 22, aged 69, of cerebral hemorrhage.

Johann William Mock, Richmond Hill, N. Y.; Christian-Albrechts-Universität Medizinische Fakultät, Kiel, Prussia, Germany, 1901; medical examiner of Selective Service Board 277, Ozone Park; died in the Swedish Hospital, Brooklyn, March 12, aged 68, of coronary occlusion.

Charles Madison Mooney, Columbus, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1900; died March 24, aged 73, of pneumonia.

John W. O'Neill, Chicago; Rush Medical College, Chicago, 1892; member of the Illinois State Medical Society; for many years a member of the staff of the Henrotin Hospital; died April 4, aged 84, of carcinoma of the stomach, uremia, arteriosclerosis and myocarditis.

Charles Othello Ozias, Kansas City, Kan.; Kansas City (Mo.) Medical College, 1892; died February 24, aged 82, of respiratory paralysis, bronchopneumonia and cerebral hemorrhage.

Frank Orren Pershing, Keota, Iowa; College of Physicians and Surgeons, Keokuk, 1893; died March 18, aged 76, of cerebral thrombosis.

David Richard Pickens, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1907; assistant professor of clinical surgery at his alma mater; past president of the Middle Tennessee Medical Association and the Nashville Academy of Medicine; a captain in the medical corps of the U. S. Army during World War I; served on the staffs of the Protestant and Vanderbilt University hospitals; died March 24, aged 61, of cerebral thrombosis.

Robert James Pilkington, Astoria, Ore.; Willamette University Medical Department, Salem, 1890; member of the Oregon State Medical Society; fellow of the American College of Surgeons; served as acting assistant surgeon for the U. S. Public Health Service; formerly city physician; a member of the old Oregon National Guard; member of the visiting staffs of St. Mary's and Columbia hospitals; died April 2, aged 74, of heart disease.

Alonzo L. Proffitt, Newport, Tenn.; Lincoln Memorial University Medical Department, Knoxville, 1910; past president of the Cocke County Medical Society; died March 13, aged 60.

Eli Francisco Rambo ✙ Webster City, Iowa; Rush Medical College, Chicago, 1917; fellow of the American College of Surgeons; died suddenly March 13, aged 53, of cerebral hemorrhage.

Albert F. Randolph, Koszta, Iowa; State University of Iowa College of Medicine, Iowa City, 1891; died in Marengo March 23, aged 80, of uremia.

George L. Rankin, Paris, Ky.; Kentucky School of Medicine, Louisville, 1904; member of the Kentucky State Medical Association; died March 24, aged 66, of coronary occlusion.

Hardin Williams Reynolds, Bristol, Tenn.; Chicago Homeopathic Medical College, 1900; died February 5, aged 70.

William Matthews Robb, Marlow, N. H.; Baltimore Medical College, 1897; died March 3, aged 72, of coronary thrombosis.

John Patrick Scanlan ✙ Freeport, Ill.; Chicago Medical School, 1927; died in St. Francis Hospital March 10, aged 69, of cerebral thrombosis.

William J. Scott, Baxter Springs, Kan.; University Medical College of Kansas City, Mo., 1900; member of the Kansas Medical Society; past president of the Cherokee and Franklin county medical societies; at one time in charge of Franklin County health unit; formerly on the staffs of the Ellsworth Hospital, Ellsworth, and the Ransom Memorial Hospital, Ottawa; served as Union Pacific Railroad surgeon at Sharon Springs; since 1942 surgeon for the Frisco Railroad; died March 15, aged 67, of carcinoma of the right lung.

John H. Siegel, Collinsville, Ill.; Beaumont Hospital Medical College, St. Louis, 1897; formerly mayor of Collinsville; for many years surgeon of the Pennsylvania Railroad; on the staff of St. Mary's Hospital, East St. Louis, where he died March 28, aged 72, of cerebral hemorrhage.

Cyrenius C. Smith, Bedford, Mich.; the Hahnemann Medical College and Hospital, Chicago, 1884; died in Grand Rapids March 28, aged 83, of uremia and chronic endocarditis.

George Foster Smith, Lawrenceburg, Ind.; Miami Medical College, Cincinnati, 1897; member of the Indiana State Medical Association; served during World War I; secretary of the city board of health; president of the Dearborn County Fair Association; served as county coroner; on the staff of the Margaret Mary Hospital, Batesville; for many years physician for the New York Central and Baltimore and Ohio railroads; died March 26, aged 69, of edema of the lungs and acute congestive heart disease.

George Leon Smith, Swainsboro, Ga.; University of Georgia Medical Department, Augusta, 1881; member of the Medical Association of Georgia; died January 4, aged 83, of pneumonia and influenza.

Hamilton Mills Smith, Camden, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1937; died in Haddon Heights March 26, aged 32, of cerebral hemorrhage due to a self-inflicted gunshot wound.

Willard Wallace Smith ✠ Phoenix, Ariz.; Cleveland Homeopathic Medical College, 1898; Jefferson Medical College of Philadelphia, 1900; fellow of the American College of Surgeons; attending surgeon, St. Joseph's and Good Samaritan hospitals; died March 25, aged 68, of congestive and organic heart disease, pulmonary tuberculosis and chronic nephritis.

James Gregory Stone, Montrose, S. D.; John A. Creighton Medical College, Omaha, 1906; member of the South Dakota State Medical Association; died March 31, aged 61, of cerebral hemorrhage.

Ralph Edgarton Stone ✠ Beverly, Mass.; Harvard Medical School, Boston, 1905; member of the staffs of the Beverly Hospital, the Benjamin Stickney Cable Memorial Hospital, Ipswich, and the North Shore Babies' Hospital, Salem, and consultant physician for the New England Industrial School for the Deaf; member of the National Tuberculosis Association, the Beverly Chamber of Commerce and the Harvard Club of the North Shore; died March 22, aged 66.

Wade Walton Stone ✠ Toledo, Ohio; University of Michigan Medical School, Ann Arbor, 1922; fellow of the American College of Surgeons; on the staffs of the St. Vincent's, Toledo, Mercy, Women's and Children's, and Lucas County hospitals; died March 27, aged 45, of heart disease.

Willis Frederick Stotler, Shenandoah, Iowa; Louisville (Ky.) Medical College, 1893; died in the Tri-County Hospital, Orangeburg, S. C., March 24, aged 77, of cerebral hemorrhage and arteriosclerosis.

Claude Emmett Stump, Richmond, Va.; Medical College of Virginia, Richmond, 1920; died March 6, aged 52.

Thomas J. Taylor, San Diego, Calif.; Western Reserve University Medical Department, Cleveland, 1902; died March 7, aged 79, of angina pectoris.

Albert Thompson ✠ St. James, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1905; for many years president of the board of education of St. James, coroner of Watonwan County and member of the library board; chairman of the nursing board; served as health officer of St. James; president of St. James Telephone Company for twenty-five years; on the staff of St. James Hospital; died March 10, aged 71, of coronary thrombosis.

Jerry A. Trovillion, Winter Park, Fla.; University of Tennessee Medical Department, Nashville, 1890; a retired druggist; a founder and physician in charge of the Harrisburg Sanitarium, Harrisburg, Ill.; died in the Florida Sanitarium and Hospital, Orlando, February 28, aged 80, of pneumonia and chronic bronchitis.

Marcus Othello Tucker, Santa Monica, Calif.; Meharry Medical College, Nashville, Tenn., 1928; member of the California Medical Association; on the staffs of the Culver City Hospital, Culver City, Santa Monica and St. John's hospitals; died March 11, aged 51, of carcinoma of the stomach.

Alvin Putman Twigg, Flint Stone, Md. (licensed in Maryland in 1889); died March 27, aged 84, of pernicious anemia.

Elton Murray Varney, Peabody, Mass.; Medical School of Maine, Portland, 1903; member of the Massachusetts Medical Society; on the staff of the J. B. Thomas Hospital, where he died March 11, aged 65, of coronary thrombosis.

Joseph Louis Veit, Chicago; College of Physicians and Surgeons of Chicago, 1895; director of the contagious diseases branch of the board of health for many years; physician for the Little Sisters of the Poor for forty-seven years; on the staff of Jefferson Park Hospital; died May 19, aged 72, of chronic myocarditis and diabetes mellitus.

Irvin Arthur Weichbrodt ✠ Seattle; St. Louis University School of Medicine, 1904; past president of the King County Medical Society; fellow of the American College of Surgeons; served during World War I; member of the staffs of the King County Hospital, Swedish Hospital, St. Luke's Hospital and the Providence Hospital, where he died April 13, aged 64, of a self-inflicted bullet wound.

Olive A. Charles Wilson, Meridian, Miss.; Woman's Medical College, Chicago, 1891; formerly secretary of the Green County (Ark.) Medical Society; served as health officer of Paragould, Ark., and Greene County; past president of the Arkansas Society of Women Physicians; died in Rush's Infirmary March 12, aged 84.

DIED WHILE IN MILITARY SERVICE

William Wentworth Heyerdale, Rochester, Minn.; Louisiana State University School of Medicine, New Orleans, 1935; entered the Mayo Foundation as a fellow in surgery on Oct. 1, 1935 and became a consulting physician of the Mayo Clinic in January 1939; began extended active duty as a first lieutenant in the medical reserve corps of the U. S. Army on Aug. 24, 1942; later promoted to captain; died on the island of New Caledonia March 11, aged 36, of injuries received in an automobile accident.

Samuel Charles Holnitsky, Chicago; Loyola University School of Medicine, Chicago, 1927; served with the Civilian Conservation Corps, Sparta, Wis.; a first lieutenant in the medical reserve corps, U. S. Army; died in Washington, D. C., May 6, aged 40, of incised wounds of both wrists.

A. Herman Koplin, Trenton, N. J.; Jefferson Medical College of Philadelphia, 1937; member of the Medical Society of New Jersey; commissioned a first lieutenant in the medical reserve corps of the U. S. Army and later promoted to captain and major; died in the Mount Sinai Hospital, New York, January 23, aged 31, of carcinoma of the stomach.

Patrick Sarofield Madigan ✠ Colonel, M. C., U. S. Army, Washington, D. C.; Georgetown University School of Medicine, Washington, 1912; Army Medical School, Washington, and the Medical Field Service School, Carlisle, Pa., in 1921; at one time associate professor of physiology at his alma mater; fellow of the American College of Physicians; member of the Medical Association of Isthmian Canal Zone; entered the medical corps of the U. S. Army as a first lieutenant in 1917; rose through the various ranks to that of lieutenant colonel in 1937; later promoted to colonel; served in France with the Seventh Division, Sixty-Fourth Infantry, during World War I; in 1940 appointed medical adviser to the Surgeon General and the Adjutant General in Washington; served as commanding officer of the Station Hospital at Camp Lee, Va., and as chief surgeon at the Station Hospital at Fort Belvoir, Va., where he died May 8, aged 57, of coronary occlusion.

Robert Clarendon Maxon ✠ Schenectady, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1935; served an internship at the Albany Hospital, Albany, and a residency at the Mary McClellan Hospital, Cambridge; began extended active duty as a lieutenant in the medical corps, U. S. Naval Reserve, on Sept. 7, 1942; died in the U. S. Naval Hospital, San Diego, April 28, aged 35.

John Wesley Moore ✠ Quincy, Calif.; University of California Medical School, San Francisco, 1934; at one time associated with the Civilian Conservation Corps in Coutolenc, Calif.; formerly owner of the Plumas Industrial Hospital; began active duty as a first lieutenant in the medical corps, Army of the United States, on Oct. 22, 1942; later promoted to captain; a flight surgeon in the Air Corps; died in the Southwest Pacific area March 20, aged 36, in an airplane accident.

James Joseph Quinn, Lancaster, Pa.; Jefferson Medical College of Philadelphia, 1940; member of the Medical Society of the State of Pennsylvania; served an internship at St. Joseph's Hospital; commissioned a first lieutenant in the medical corps, Army of the United States; died in an airplane accident in the European area July 8, 1943, aged 30.

Correspondence

PARENTAL INFLUENCE ON THE INCIDENCE OF CANCER

To the Editor:—Dr. C. C. Little's article on the "Parental Influence on the Incidence of Cancer" (THE JOURNAL, May 13, p. 93) gives an excellent picture of the many important findings of the staff of the Roscoe B. Jackson Memorial Laboratory. The second chapter of his paper stimulates some discussion. I wholeheartedly agree with the author's statements "Cancer is cancer whether it is growing at the site of its origin or in tissue culture or in certain hosts in which it has been transplanted. . . . In any or all cases it is its progressive and continued power of cell division that distinguishes it from the rest of the body in which it originated." The following sentence, however, in the article written between the foregoing statements is only partly acceptable: "In any or all situations it is a part of the living and growing tissue of the individual in which it arose." It is a part, but it is a foreign body in the normal body like a heteroploid branch in a plant or a genetic mosaic, e. g. a partly male, partly female Drosophila, or the diploid and poikiloploid territories in an otherwise haploid parthenogenic tadpole. I emphasized recently (West Virginia Academy of Science, vol. 16, *West Virginia Univ. Bull.*, series 44, No. 9-I, March 1944, p. 41) the importance of viability and compatibility of aberrant cells arising in normal tissue and the fact that cells with disturbed cell divisions occur in all kinds of tissues and in all ages of the individual from the first cleavage of the egg to the last second of life. These disturbed cell divisions give rise to abnormal cells. The question of viability is concerned with the problem whether the first aberrant cell is stabilized in itself to survive; the compatibility, however, is the problem whether such cells or tissues are able to survive in an environment whose hereditary mass differs from their own. Both the normal fetus and the aberrant tissue are partly different and partly equal in the hereditary mass with "the living and growing tissue of the individual in which they arose." Since pregnancy is a physiologic process, the relationship of the tissues of different hereditary mass is usually well balanced; occasionally, e. g. erythroblastosis fetalis, this difference works detrimentally to one or both parts (Levine, Philip; Burnham, Lyman; Katzin, E. M., and Vogel, Peter: *Am. J. Obst. & Gynec.* **42**:925 [Dec.] 1941). The cancer cell is, as Little calls it, "engaged in living independently with a high degree of *primitive* [italics mine] biologic effectiveness." We assume that the cancer cell differs from a normal cell in hereditary mass and that therefore these cells form an aberrant tissue. With Hansemann, Ewing and others I see no reason to assume that the differences in behavior are a return to primitive or embryonal features.

Regarding the mentioned problem of "stimulation" of parthenogenesis in the frog's egg with Bataillon's method, I said in 1920 (*Sitzungsb. d. Preuss. Akad. d. Wissensch.* **24**:417) "The activation of the division of an egg is a procedure like the activation of the division of any other cell. It is also subject to the same disturbances as the division of any other cell. . . ." The findings in these experiments were the basis of our tumor research and the study of aberrant cell divisions, now continued under a grant in aid of the Committee on Scientific Research of the American Medical Association.

Little says that "the lighter exposures to ultraviolet or other radiations may disrupt or destroy the action of growth inhibitors and thus release basic potentialities of formerly restricted cells." The impression is given that the cancer cell may be a liberated cell with the same structure but changed physiologic behavior. But, as he said before, "cancer is cancer . . ." its tissue is definitely different in structure as well as in behavior. Detailed discussions on these problems are given in my publication, already cited, "Malignancy as a Cytological Problem," which ends with the remarks that the working hypothesis of aberrant cell divisions as starting points of tissue mutations provides a bridge between very dissimilar findings, such as those of strains of animals with definite hereditary factors for tumor formations and purely extrinsic factors as ultraviolet light, x-rays, cancerigenic hydrocarbons and colchicine. The analysis of cell division and its aberrations, on the one hand, and that of viability and compatibility of aberrant cells and tissue, on the other hand, may lead to an understanding of the dynamics of malignant growth. Malignant tumors have been considered as entities in themselves, produced by mysterious causes. In his last paper, published posthumously, Azkanzy (*Ztschr. f. Krebsforsch.* **43**:6, 1936) emphasized that the mutation theory brings the tumor cell out of its biologic isolation.

I welcome Dr. Little's article as an important "stimulant" for the study of the biology of tumor formation.

FRITZ LEVY, PH.D., M.D., Elkins, W. Va.

To the Editor:—This is a revolutionary age. Scientific discoveries are shaking the pillars of the Temple and we are calmly accepting the new dicta. There are limits, however, to our subserviency. C. C. Little in his paper "Parental Influence on the Incidence of Cancer" (THE JOURNAL, May 13, p. 93) takes liberties with our concept of what is normal. He argues that it is normal for the cell to metabolize and divide. "It is in a biologic sense 'abnormal' for it to sacrifice this basic activity and to replace it by assumption of some specialized form of function the duration of which is definitely limited." From his point of view "cell division [growth] is the natural objective and climax of activity of the normal healthy cell." On this rather thin basis he looks on the cancer cell with its unlimited power of cell division as the normal (healthy?) cell and all other cells, except unicellular animals, as abnormal, because they are restrained through inhibitions. The term normal is derived from "norma" (a carpenter's square) and fixes a rule or pattern, "conforming to established law, order, habit or usage," according to the Century Dictionary. It has come to connote standards for comparison, e. g. a certain regularity of action of the heart, a pitch or tone of absolute acoustical value in music, a pattern of cells and of cell relations to constitute organs and tissues, and so on. Apart from possible subjection to certain mendelian principles there are probably few living things that have less respect for established law, order, habit or usage than the cancer cell. Little's proposition would serve to undermine the value of a term that has been adopted into most languages with little change in spelling and has been used to signify rightfulness, constancy, consistency and absence of defect, attributes that could hardly be associated with those of the cancer cell.

He further asserts that, since the cancer cell has broken away from restraining inhibitions and established its power to grow independently of these curbs, no stimulation is necessary for its growth. The mere removal of the inhibitions sets it free to grow as it pleases: no provocative is required. We are asked if it is not much more simple to believe that the cell division that occurs in tissues following injury by ultraviolet rays is due to destruction of the action of growth inhibitors rather than to the stimulus of cell injury. The orderly character of most repair processes points to a negative answer to this question. That silica, for example, and other irritants cause fibrosis by releasing cells from growth restraint is difficult to swallow. From Little's point of view the carcinogens must act indirectly. Microscopic examination of tumors tends to leave one cold to Little's thesis. Cell division gone mad is encountered not infrequently in cancers. I have in mind a picture of a tumor rich in swollen cells of giant size whose cell bodies are almost filled with mitoses that are largely pluripolar. The appearance sug-

gests the activity of some explosive force that has stimulated mitosis and then disrupted the mitotic figures. It is difficult to conceive of this orgiastic cell division as a passive process, just as it is difficult to apply the term normal to a type of cell whose potentialities are limitless and irregular.

TIMOTHY LEARY, M.D., Boston.

To the Editor:—Dr. Little's masterly review of his own work and that of others (THE JOURNAL, May 13) in the field of cancer and parental influences gives us all food for thought. The concept of inhibition of differentiated cells with subsequent cell division on release has multifold ramifications not only in the study of neoplasms but in that of other pathologic changes.

One possibility immediately comes to mind in the light of recent studies wherein arthritic changes were found to occur after the use of large doses of synthetic adrenal cortex extract. The work of Wooley, Fekete and Little points out that gonad deficiency as in castration releases the adrenal inhibitor with subsequent adrenal changes in certain strains. Is it not probable that aging with its accompanying gonad deficiency will do the same, and may this not be a prime cause of arthritis in certain individuals? We already know of the use of estrogens in some cases of menopausal "arthralgias." Perhaps a new, more complete gonadal extract will inhibit this release mechanism.

Dr. Little's work is the first step to a new concept of the etiology and therapy of many of our present day unsolved pathologic changes.

JOSEF K. GOLDWEBER, M.D., New York.

"SALIVARY AMYLASE AND DENTAL CARIES"

To the Editor:—In the May 6 issue of THE JOURNAL the editorial entitled "Salivary Amylase and Dental Caries" properly emphasizes the significance of the findings that a direct relationship exists between the diastatic activity of saliva and the incidence of dental caries. However, credit for the discovery is misplaced. It should have been given to Florestano, Faber and James (*J. Am. Dent. A.* **28**:1799 [Nov.] 1941), whose complete paper on the subject appeared well over two years ago. The editorial does not mention these workers but gives all the credit to Turner and Crane (*Science* **99**:262 [March 31] 1944), whose preliminary paper was published less than two months ago. Probably the oversight was due to the failure of Turner and Crane to cite the paper by Florestano and his associates. Whatever might be the reason for the error, attention should be called to this correction.

HARRY G. DAY, Sc.D.,
Department of Chemistry, Indiana University,
Bloomington, Ind.

PHYSIOLOGIC ROLE OF TONSILS

To the Editor:—A recently published report by Trautman and Schreiter (Zur physiologischen Bedeutung der Tonsillen, *Deutsche tierärztl. Wchnschr.* **50**:361, 1942) appears to furnish noteworthy new information regarding the physiologic role of tonsils in animals and thus may be of interest to the medical profession. The work of these German investigators was based on the fact that fowl are devoid of tonsils. Therefore they fed pharyngeal tonsils of young and adult mammals (calves and cows) to fowl (young roosters, hens and ducks). The feeding of one tonsil per week caused growth inhibition and disturbances in feathers, comb and wattles soon after feeding. The effects were more pronounced if tonsils of young animals were fed. These observations led to the assumption by the authors that hormones originate from the tonsils, which stimulate the activity of the thyroid and the pineal gland. With involution of tonsils in maturing animals, the formation of these hormones is assumed to decrease, which would explain the different effects which were obtained when calf's or cow's tonsils were fed. So far no exact information has been obtained about the actual formation and chemical nature of this hormonal substance.

WERNER BRAUN, Berkeley, Calif.
Division of Veterinary Science, University of California.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, June 10, page 449.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral.* Chicago, June 17. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Various centers, Oct. 16. Candidates in military service may take examination at their place of duty. Final date for filing application is August 15. Asst. Sec., Dr. W. A. Werrell, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, Oct. 5-7. Sec., Dr. S. Judd Beach, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and Written. Part I.* Chicago, Oct. 13-14. New Orleans, Sept. 29-30. New York, Oct. 6-7. San Francisco, Oct. 20-21. Final date for filing application is August 1. Sec., Dr. G. A. Caldwell, 3503 Prytania St., New Orleans.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 4-7. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, Sept. 22. *Oral.* St. Louis, Nov. 8-9, New York, Dec. 15-16. Final date for filing application is Aug. 15. Sec., Dr. C. A. Aldrich, 115½ First Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Part I. Various centers, October 25. Final date for filing application is August 15. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Venereal Diseases: Constitutionality of State Statute Authorizing Physical Examination of Defendant in Criminal Cause Suspected of Venereal Infection.—An Illinois statute provides that, if any person coming before any judge or justice of the peace on any criminal charge is suspected of suffering from any communicable venereal disease, the judge or justice shall cause the defendant to be examined for the presence of venereal disease. If the defendant is found infected, the judge or justice is empowered to commit him or her to an appropriate institution for segregation and treatment. (Ill. Rev. Stat. 1943, chap. 23, par. 392.) The two petitioners were charged with solicitation to prostitution, and the justice of the peace before whom they were arraigned ordered them held without bail and examined to determine whether or not they were infected with venereal disease. Both defendants refused to submit to examination and filed petitions for writs of habeas corpus in the city court of East St. Louis, which, after a hearing, remanded them to the custody of the chief of police. Similar petitions were filed with the circuit court of St. Clair County with similar results. An original petition for writ of habeas corpus was then filed in the Supreme Court of Illinois, which released the petitioners on bail pending a hearing on their petition.

The petitioners contended first that the Illinois statute under which they were held for examination was unconstitutional and void because it deprived them of liberty without due process of law in violation of applicable provisions in both the federal and

state constitutions. The power to detain a person, said the Supreme Court, suspected of having a contagious disease rests in the police power of the state. When a state employs its police power to safeguard the public health it may act in a summary manner even though the result is to deprive a citizen of his liberty. Such powers were recognized and approved in *People ex rel. Barmore* v. *Robertson*, 302 Ill. 422, at page 427, 134 N. E. 185, 22 A. L. R. 835, where this court said:

> Among all the objects sought to be secured by governmental laws none is more important than the preservation of public health. The duty to preserve the public health finds ample support in the police power, which is inherent in the state and which the state cannot surrender. Every state has acknowledged power to pass and enforce quarantine, health and inspection laws to prevent the introduction of disease, pestilence and unwholesome food, and such laws must be submitted to by individuals for the good of the public. The constitutional guaranties that no person shall be deprived of life, liberty or property without due process of law, and that no state shall deny to any person within its jurisdiction the equal protection of the laws, were not intended to limit the subjects upon which the police power of a state may lawfully be asserted in this any more than in any other connection. . . . Generally speaking, what laws or regulations are necessary to protect public health and secure public comfort is a legislative question, and appropriate measurcs intended and calculated to accomplish these ends are not subject to judicial review. The exercise of the police power is a matter resting in the discretion of the legislature or the board or tribunal to which the power is delegated, and the courts will not interfere with the exercise of this power except where the regulations adopted for the protection of the public health are arbitrary, oppressive and unreasonable. The court has nothing to do with the wisdom or expediency of the measures adopted. . . .

It has almost universally been held in this country that constitutional guaranties must yield to the enforcement of the statutes and ordinances designed to promote the public health as a part of the police powers of the state. *In re McGee*, 105 Kan. 574, 185 P. 14, 8 A. L. R. 831; *State ex rel. McBride* v. *Superior Court*, 103 Wash. 409, 174 P. 973. That the statute in question is a measure enacted within the police power of the state of Illinois is unquestioned. In the McBride case a similar detention was ordered under an ordinance providing for examination of "all persons who are taken into custody by the police department of the city, who are suspected of being afflicted with any contagious or infectious disease or malady." In that case the relator was arrested charged with the violation of a city ordinance and was turned over to the health commissioner of the city for examination. She was found to be afflicted with a dangerous venereal disease and committed to the isolation hospital of the city and detained there for treatment. She sued out a writ of habeas corpus in the Supreme Court of Washington and in her petition, among other things, alleged that she was arrested without any warrant; that the charge against her was unfounded and untrue, and that the city had no power to pass the ordinance. In a lengthy and well considered opinion that court held:

> The power to detain one who is suspected of having a contagious disease rests in the police power, and to this extent the authority of the commissioner is not challenged, but the right to restrain a subject without judicial review is vehemently denied.

The court also stated the general rule to be as follows:

> " . . . the public health is the highest law; and whenever a police regulation is reasonably demonstrated to be a promoter of public health, all constitutionally guaranteed rights must give way, to be sacrificed without compensation to the owner." Tiedeman, State and Federal Control of Persons and Property, sec. 169.

In *Ex parte Company*, 106 Ohio St. 50, 139 N. E. 204, the Supreme Court of Ohio rejected the constitutional objections of two women who were quarantined for venereal disease, saying in part:

> Regulation 23 empowers the health commissioner of each city to make examination of persons reasonably suspected of having a venereal disease. All known prostitutes and persons associating with them shall be considered as reasonably suspected of having a venereal disease. . . . The protection of the health and lives of the public is paramount, and those who by conduct and association contract such disease as makes them a menace to the health and morals of the community must submit to such regulation as will protect the public.

In *Zucht* v. *King*, 260 U. S. 174, 43 S. Ct. 24, 67 L. Ed. 194, it was held that a municipal ordinance is not invalid because it delegates to the board of health authority to determine when vaccination shall be enforced, without providing any rule for the guidance of the board.

While the legislature, continued the court, through its police powers can delegate to boards of health and municipalities authority to regulate and control all matters which tend to preserve the public health, such regulations cannot be arbitrary, oppressive and unreasonable. The provisions of the statute here in question giving a justice of the peace from the evidence "or otherwise" power to detain persons suspected of having a venereal disease does not mean that he has any authority outside of the evidence appearing before him. The power to compel any person arrested on any criminal charge to submit to an examination is limited to a criminal case in which evidence is produced or circumstances develop tending to indicate that the person charged may reasonably be suspected of being afflicted with a communicable venereal disease and must, from its very nature, present sufficient evidence on which the justice of the peace may issue the order referring the party to some medical officer for such examination. It may be pointed out that a venereal disease most often exists within the veil of secrecy. Certainly one who is charged with soliciting to prostitution and one of lewd and lascivious character is one who may first be suspected of carrying such dreadful affliction. It is most reasonable to suspect that both of the petitioners, if carrying on the practice of prostitution, are indiscriminate and promiscuous in their bodily contacts and are natural subjects and carriers of venereal disease. It was therefore logical and natural that suspicion immediately be cast upon them and necessity dictate a physical examination of their persons. The petitioners furthermore have agreed, for the purpose of this suit, that their arrest was legal and proper, that the complaints later filed and the warrants issued likewise are legal and proper. Such being the case, their detention for examination as suspects carrying venereal diseases is likewise reasonable and proper. The contention that the act violates the constitution of the United States and the constitution of the state of Illinois is not supported by authority. The fourteenth amendment to the United States constitution does not limit the states in the proper exercise of police power.

The petitioners next contended that the Illinois statute in question was void because it contained objects (presumably with respect to detention for examination) not expressed in the title of the act. The title of the act read: "An Act to enable counties or cities to segregate and treat persons suffering from certain communicable diseases." The provisions objected to as stated authorized the trial judge to require a defendant in a criminal case suspected of venereal infection to submit to examination to determine the presence of venereal disease. A mere reading of the title and the act, said the Supreme Court, demonstrate that the title properly describes the subjects contained in the statute.

The petitioners finally contended that the statute in question violated those provisions of the Illinois constitution which state, in effect, that (1) a defendant has the right to be heard in answer to criminal charges and to defend in person, the right to demand the nature and cause of the accusation and the right to a speedy trial, and (2) bail may not be denied to defendant not charged with a capital offense. The statute in question, answered the Supreme Court, violates no portion of the constitutional provisions referred to, since it is based on the police power of the state and does not fall within the provisions of the criminal code. This likewise answers the contention that the petitioners were held without bail, since quarantine under the police provisions naturally implies such a detention and demand it.

The petition for a writ of habeas corpus was accordingly denied, and the petitioners were remanded to the custody of the chief of police.—*People ex rel. Baker v. Strautz, Chief of Police, 54 N. E. (2d) 441 (Ill., 1944).*

Society Proceedings

COMING MEETINGS

American Gynecological Society, Hershey, Penna., June 19-21. Dr. Howard C. Taylor Jr., 842 Park Ave., New York 21, Secretary.

American Urological Association, St. Louis, June 19-22. Dr. Thomas D. Moore, 899 Madison Ave., Memphis, 3, Tenn., Secretary.

Maine Medical Association, Rockland, June 25-27. Dr. Frederick R. Carter, 142 High Street, Portland 3, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

207:421-560 (April) 1944

"Cardiac" or Congestive Cirrhosis: Pathologic and Clinical Aspects. S. Koletsky and J. H. Barnebee.—p. 421.
Annular Pancreas: Tabulation of Recent Literature and Report of Case. B. E. Stofer.—p. 430.
*Electrocardiogram and "Two Step" Exercise: Test of Cardiac Function and Coronary Insufficiency. A. M. Master, S. Nuzie, R. C. Brown and R. C. Parker Jr.—p. 435.
Morphologic Obliteration of Chronic Myeloid Leukemia by Active Tuberculosis: Report of Case. R. W. Heinle and D. R. Weir.—p. 450.
Allergic Agranulocytosis with Complications: Case Report. J. A. Blue.—p. 453.
Blood Diastase Values in Mumps and Mumps Pancreatitis. S. Zelman.—p. 461.
Observations on Oral Administration of Citrated Blood in Man: III. Effect on Temperature and White Blood Cell Count. L. Schiff, N. Shapiro and R. J. Stevens.—p. 465.
Analysis of Results Obtained with Small Doses of Gold Salts in Treatment of Rheumatoid Arthritis. W. B. Rawls, B. J. Gruskin, A. A. Ressa, H. J. Dworaan and D. Schreiber.—p. 528.
Influence of Large Doses of Vitamin A on Plasma Vitamin A Level. F. Steigmann and H. Popper.—p. 468.
Method for Standardizing Penicillin. Dorothy H. Heilman.—p. 477.
*Sulfanilamide as Prophylactic Measure in Recurrent Rheumatic Infection: Controlled Study Involving 131 "Patient-Seasons." R. H. Feldt.—p. 483.
Study of Sulfonamide Aerosol Inhalation: Supplemental Note. C. C. Chapple and Helen M. Lynch.—p. 488.
*Sulfadiazine and Its Sodium Compound in Treatment of Meningococcic Meningitis and Meningococcemia. E. Appelbaum and J. Nelson.—p. 492.
Chief Urinary Pigment: Relationship Between Rate of Excretion of Yellow Urinary Pigment and Metabolic Rate. M. Ostow and S. Philo.—p. 507.
Electroencephalographic Studies During Fever Induced by Typhoid Vaccine and Malaria in Patients with Neurosyphilis. M. Greenblatt and A. S. Rose.—p. 512.
Use of Equine Gonadotropin in Male Infertility: Analysis of 127 Patients. C. W. Charny.—p. 519.

"Two Step" Exercise Test of Cardiac Function.—Master and his associates state that in many cases of coronary artery disease with angina pectoris the size of the heart and cardiac pulsations, as seen in the x-ray film, fluoroscopically and by electrocardiogram are normal. In valvular disease patients often complain of dyspnea and pain although the physical examination reveals no evidence of heart failure. The authors report results on 84 Navy personnel between the ages of 17 and 44. The electrocardiogram following the two step exercise has proved its practical value. The test is of importance in differentiating functional from organic heart disease, particularly when physical examination, the x-ray film, fluoroscopy and electrocardiogram are negative. Positive changes in the electrocardiogram after the two step exercise indicate anoxemia of the heart muscle or coronary insufficiency. Both this test and the 10 per cent oxygen anoxemia test were performed on every person considered in this report. The electrocardiographic changes corresponded almost exactly in the two tests. The exercise must be standardized for age and weight, since changes occur in normal persons if the effort is excessive. In normal persons the blood pressure and pulse return to within 10 points of resting levels in one and one-half minutes. The following changes in the electrocardiogram after the two step exercise are considered abnormal: a depression of the RST segment of more than 0.5 mm. in any lead, a change from an upright T wave to an isoelectric or inverted T wave or T wave changes in the opposite direction. The test is of particular value in detecting coronary insufficiency when it is latent. In valvular heart disease the test discloses the state of cardiac function and whether the cardiac output is adequate for the coronary arteries. In hypertension the control electrocardiogram often shows evidence of coronary insufficiency and therefore may not change after exercise. There is a lag in return of the blood pressure and pulse following the two step exercise in effort syndrome (neurocirculatory asthenia) and the electrocardiogram gives evidence of anoxemia of the heart muscle following exercise. The authors believe that in this syndrome there is a congenitally small, hypoplastic heart which is inadequate on effort. In chest deformities and in congenital heart disease the electrocardiogram after the two step exercise is valuable. An upper respiratory infection, lung disease, gastroenteritis, fatigue and lack of sleep may produce abnormal results. The electrocardiogram after the two step exercise is a short, harmless and practical test. It should be a routine procedure in men over 40, in the military service and also for eliminating the unfit for special services where unusual physical and mental strain are experienced, as in aviation, submarine personnel and raider forces.

Sulfanilamide as Prophylactic for Recurrent Rheumatic Infection.—Feldt reports a program of prophylaxis that was undertaken among outpatients of the cardiac clinic of the Milwaukee Children's Hospital during two seasons. Patients had previously been assigned in rotation to a clinic held on Monday, Wednesday or Saturday. Children with a history of definite rheumatic fever or chorea and those with undoubted rheumatic heart disease were included in the study. All such patients in the Monday or Saturday clinics received sulfanilamide, and those in the Wednesday clinic acted as controls. In every instance the rheumatic process was regarded as quiescent when the study began. Most patients were given 1 Gm. of sulfanilamide daily in three divided doses. As much as 2 Gm. or as little as 0.3 Gm. daily was used, depending on the blood sulfanilamide level and the presence of toxic symptoms. Altogether, 89 patient-seasons were represented in the treated group and 42 patient-seasons in the control series. No rheumatic recurrences appeared among the children who took sulfanilamide. There were three (7.2 per cent) major and minor recurrences among control patients. Questionable rheumatic episodes were observed with frequency in the control group. The incidence of positive beta hemolytic streptococcus throat cultures was approximately the same in the two groups. Manifestations of sulfanilamide toxicity were neither frequent nor severe. The author recommends sulfanilamide as a relatively safe and effective prophylactic measure against recurrent rheumatic infection.

Sulfadiazine and Its Sodium Compound in Meningococcic Meningitis.—Appelbaum and Nelson used sulfadiazine and its sodium compound in 141 bacteriologically proved cases of meningococcic meningitis and 8 cases of meningococcemia without meningeal involvement. With few exceptions the disease was well controlled and chemotherapy could be safely discontinued when the patient showed a decided improvement in the mental state, was afebrile for twenty-four to forty-eight hours and had received a total of 15 to 20 Gm. of the drug. The rapidity with which most of the serious symptoms disappeared was little short of astounding. Of the 141 patients with meningitis, 139 recovered and 2 died, a mortality of 1.4 per cent. The 8 patients with meningococcemia but without meningeal involvement also recovered. The most common complication was arthritis; it occurred in 15 cases. Toxic reactions occurred in 42 patients. They were most frequently related to the urinary tract. Drug fever was second in importance among the toxic effects. There were 4 cases of encephalopathy resulting from sulfadiazine intoxication. A morbilliform skin eruption was noted in 3 cases and was associated in each instance with a slight rise in temperature. With the exception of the peripheral neuropathies, all the toxic reactions cleared up rapidly following withdrawal of the drug and the institution of remedial measures. In cases of apparent failure of response to sulfonamide therapy the specific horse serum has not produced a striking effect. Most chemotherapeutic failures were instances of intoxication, often the result of overtreatment. The authors are convinced that, excepting in those cases which are of the

fulminating form or in which a severe associated disease is present, no case of meningococcic meningitis or meningococcemia should fail to respond to properly administered chemotherapy.

American Journal of Psychiatry, New York

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American Journal of Public Health, New York

34:317-434 (April) 1944

*Immunity in Human Subjects Artificially Infected with Influenza Virus, Type B. T. Francis Jr., H. E. Pearson, J. E. Salk and P. N. Brown.—p. 317.
Epidemiology of Atypical Pneumonia and Acute Respiratory Disease at Fort Bragg, North Carolina. A. D. Langmuir.—p. 335.
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Human Serum Albumin as Stabilizing Agent for Schick Toxin. G. Edsall and Louise Wyman.—p. 365.
Surveys of Nutrition of Populations: 3. Vitamin A Nutrition of Rural Population in Middle Tennessee. J. B. Youmans, E. W. Patton, W. R. Sutton, Ruth Kern and Ruth Steinkamp.—p. 368.
Wartime Problems of County Health Officer. H. O. Swartout.—p. 379.
Procurement and Assignment—Industrial Hygiene Problem. C. D. Selby.—p. 383.

Immunity Following Artificial Infection with Type B Influenza Virus.—According to Francis and his associates, epidemiologic evidence indicates that immunity to influenza is acquired by the human subject, presumably as the result of infection. The influenza virus type B was obtained from infected hen's eggs and was inspired by the test subjects by means of a nasal spray. The 60 persons participating in the test, which was begun Nov. 28, 1942, were residents of one ward of the Ypsilanti State Hospital, Ypsilanti, Mich. They were ambulatory males, many of them in the older age groups. Thirty served as untreated controls; the remaining 30 were sprayed with virus. In the next twenty-four hours 27 of the 30 persons receiving the sprayed virus exhibited fever of 100 F. or greater. The disease was characterized by an incubation period of ten to twenty-four hours; the onset was accompanied by chilly sensations, aching, loss of appetite and nausea. The absence of respiratory symptoms or signs was notable. In one fourth of the subjects the illness was sufficiently severe to put the person to bed. In the majority, signs and symptoms of illness had disappeared by the second day after inoculation. All but 4 subjects had at least fourfold rises in antibody titer following the inhalation. Of 30 untreated controls 11 developed significant serologic changes indicating infection incurred while residing in the same quarters. Sixty-five persons in the same ward were available for studies during the last part of March 1943. Fever, symptoms and serologic responses were noted a second time. The illness was milder in the majority of previously infected individuals than in controls inoculated at the same time. Few were refractory to reinoculation. The diminished response to reinfection was most evident in those who had the highest fevers in the first test. The evidence indicates that mild primary infections were as beneficial as the more severe ones.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

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Sulfonamide Resistant Gonorrhea in Male: Preliminary Report on Proposed Method of Therapy. A. Cohn and B. A. Kornblith, with Assistance of Irma H. Seijo and Roslyn U. Fishman.—p. 179.
Further Study of Chick Embryo as Culture Medium for Spirochaeta Pallida. U. J. Wile and S. A. M. Johnson.—p. 187.
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Massive and Fatal Cerebral Hemorrhage Following Administration of Mapharsen in Young Man with Early Latent Syphilis Cause or Coincidence? M. Leider and J. Rogers.—p. 218.
*Infectious and Serologic Relapse During Intensive Arsenotherapy of Early Syphilis. A. G. Schoch and L. J. Alexander.—p. 221.

Relapse with Intensive Arsenotherapy in Early Syphilis.—During the past fifteen months Schoch and Alexander gave three injections of mapharsen per week for eight consecutive weeks to more than 600 patients with early syphilis. Preliminary observation seems to indicate that the majority of the patients are "cured" by this system of treatment. Approximately 20 per cent must be designated as treatment failures. These failures may be placed in three categories: (1) relapse, (2) progression of the disease and (3) treatment resistance (failure of original lesion to heal). The authors observed all but the last many times, usually during the six months period immediately following completion of treatment. They report 4 cases which are noteworthy because the evidence of therapeutic failure occurred during treatment with mapharsen rather than following completion of the treatment. One patient developed during the second month of treatment a florid, large papular secondary syphilid involving the hands and forearms. A second and a third patient progressed serologically from negative to positive under treatment, and the fourth patient had a serologic relapse during the second month of the second course of treatment. The authors regard these cases as isolated examples, for they have never observed nor have they found recorded in the literature a case in which the original primary or secondary lesions failed to heal under intensive therapy. It seems possible that the factors responsible for failure during treatment may be identical with factors which result in failure following intensive therapy.

Archives of Internal Medicine, Chicago

73:199-270 (March) 1944

Transfusion Reactions Caused by Acquired Intragroup Incompatibilities. G. D. Ayer Jr. and W. F. Kammer.—p. 199.
Thiamine Metabolism, with Particular Reference to Role of Liver and Kidneys. R. H. Williams and G. W. Bissell, with assistance of J. B. Peters.—p. 203.
*Treatment of Gastroduodenal Ulcerative Disease with Sodium Alkyl Sulfate: Preliminary Report. S. J. Fogelson and D. E. Shoch.—p. 212.
*Primary Atypical Pneumonia: Analysis of 738 Cases Occurring During 1942 at Scott Field. C. A. Owen.—p. 217.
*Hodgkin's Disease—Incidence and Prognosis: Statistical Correlation with Clinicopathologic Picture. S. R. Bersack.—p. 232.
Group A Hemolytic Streptococcus Antibodies: III. Study of Simultaneous Infection of Large Number of Men by Single Type. L. A. Rantz, with technical assistance of Georgiana Dole.—p. 238.
Oscillometric Index: Aid in Evaluating Arterial Status of Lower Extremities. S. H. Rinzler, Janet Travell and Helen Civin.—p. 241.
Allergy: Review of Literature of 1943. F. M. Rackemann.—p. 248.

Sodium Alkyl Sulfate in Gastroduodenal Ulcer.—Fogelson and Shoch say that to the present the emphasis has been placed on the corrosive action of the acid component of the gastric juice, with almost complete neglect of the role of pepsin in the genesis of ulcer. It was their objective to determine whether inactivation of pepsin, rather than alteration of gastric acidity, would permit healing of the ulcer. They were able to demonstrate that the therapeutic agents customarily used in the therapy of ulcer inhibit "peptic" activity only through change of the hydrogen ion concentration and not by direct action on

the pepsin. Their next objective was to find a nontoxic material which would inactivate pepsin without altering intragastric acidity. Since Bull had shown that surface active agents would denature protein, investigations were made on these and it was found that sodium alkyl sulfate was a highly effective pepsin inhibitor. This surface active agent was well tolerated by patients who were given 0.2 Gm. every two hours throughout the day. No toxic effects occurred in either the experimental animal or man in the course of seven months' administration of this dose. The survival time of dogs treated according to the Wangensteen technic with massive daily doses of histamine was greatly prolonged by the oral administration of sodium alkyl sulfate. All patients sent to the authors for clinical trial of sodium alkyl sulfate were classified as having "intractable" ulcer, because their symptoms could not be controlled by any orthodox management. Twenty-six of 34 patients with gastroduodenal ulcerative disease had their symptoms controlled by sodium alkyl sulfate. Eight patients obtained no relief from this therapy. Two have already had recurrences on cessation of medication despite definite healing of the original lesions. Sodium alkyl sulfate is therefore not a panacea for all patients with ulcer, but it will permit healing of some ulcers that are resistant to all other types of management.

Primary Atypical Pneumonia.—Owen made observations on 738 cases of primary atypical pneumonia which were recognized during 1942 at the Station Hospital, Scott Field, Illinois. Serious complications were rare; there were no fatalities. The disease showed epidemic tendencies during the late summer and fall, when common diseases of the respiratory tract were at a minimum. Seasonal clinical variations were apparent. Atypical pneumonia attacks congregated groups of people, especially young adults. The degree of contagion and the recoverability of the etiologic agent seem to vary with the severity of the illness. After an incubation period of one to three weeks there develops in the exposed person a nonproductive cough, accompanied or followed by fever, aching, weakness and loss of appetite. Cough is the most troublesome symptom but tends to be relieved within a few days as the fever diminishes by lysis. The pulse rate, the respiratory rate and the leukocyte count are little elevated in uncomplicated cases, and there is a lack of such clearcut findings as are observed in pneumococcic pneumonia. Prolonged convalescence is the rule. If the patient is seen for the first time during convalescence, neurocirculatory asthenia may be suggested. Complications are uncommon, but the occasional development of effusion and empyema warrants recognition of the primary disease. From a military point of view the time lost is significant. Over 20,000 man-days were lost at Scott Field during 1942 from atypical pneumonia.

Hodgkin's Disease.—Bersack reviewed the clinical histories of 225 cases of Hodgkin's disease and the microscopic slides of 186 of these and of 67 of the necropsies. In the great majority of the cases there was sufficient uniformity in the several sections of one lymph node or in several simultaneously taken biopsy specimens from varying sites to warrant the characterization of each case on the basis of the microscopic appearance. The ominous determinant of prevalence of reticulum cells with associated mitoses is statistically of such compelling nature as to require a nomenclature based primarily on the histologic features shown by biopsy. Such a nomenclature, listing the types in the order of increasing duration of the course, has been suggested. The favorable elements in the atypical histologic picture of Hodgkin's disease comprise preservation of follicles, intact capsule, fibrosis, trabeculation or tendency to giant follicle formation, vascularity, presence of derivatives or fibroblast-like cells and persistence in abundant numbers of the small lymphocytic element of the node. The extent of involvement bears a direct relation to the course, being second in importance only to the histologic features. Truly localized lesions in the cervical and axillary regions do occur, and these have a much more favorable prognosis. The inguinal involvement, though clinically localized, appears to have the same significance as generalized spread. The incidence of Hodgkin's disease is not confined mostly to the 20 to 40 year age group. This study showed increased frequency of the lymphoreticuloma type of Hodgkin's disease, with its sarcomatous features, in the older age group. This contributes to the less favorable prognosis of the disease in older patients. In fact, the incidence of Hodgkin's disease in the older age group will vary as one does or does not include the lymphoreticuloma type. The patients with the generalized forms survived from nine to sixty-four months after the onset of the symptoms, those with superficial glandular forms survived from fourteen to a hundred and seven months and of those with the localized forms some survived forty-three months, while some are still alive after a hundred and thirty-three months.

Connecticut State Medical Journal, Hartford

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Mental Health vs. Money in Rehabilitation. C. C. Burlingame.—p. 207.
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Illinois Medical Journal, Chicago

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Observation on Clinical Application of Diasone in Human Tuberculosis. C. K. Petter and W. S. Prenzlau.—p. 188.
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Journal of Lab. and Clinical Medicine, St. Louis

29:339-450 (April) 1944

Shock Resulting from Intraperitoneal Implantation of Reconstituted Desiccated Muscle. E. E. Muirhead and J. M. Hill.—p. 339.
*Acute Macrocytic Hemolytic Anemia Occurring Following Administration of Sulfadiazine. J. A. Layne and F. R. Schemm.—p. 347.
Microscopic Observation of Collodion Particle Agglutination in Protein-Antiprotein Systems. M. Burger.—p. 352.
Bilateral Adrenal Hemorrhage (Waterhouse-Friderichsen Syndrome) Associated with Meningococcal Septicemia: Report of 4 Cases in Adults, with Review of Literature.—p. 357.
Juvenile Diabetes Insulin Sensitivity. H. M. Feinblatt, B. B. Alpert and E. A. Ferguson Jr.—p. 366.
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Occurrence of Members of Genus Salmonella in Inhabitants of State Hospitals of Greater Chicago Area. O. Felsenfeld and Viola Mae Young.—p. 375.
Nutritional Status of Staphylococcus Aureus as Influenced by Proflavine. G. J. Martin and C. Virginia Fisher.—p. 383.
Relationship Between Blood Volume and Blood Specific Gravity in Recovery from Cardiac Decompensation. J. R. Di Palma and P. E. Kendall.—p. 390.

Acute Macrocytic Anemia Following Sulfadiazine.—Layne and Schemm observed an acute macrocytic hemolytic anemia in a patient with bronchial asthma who was receiving sulfadiazine for the treatment of bronchopneumonia. They found that a true reversible cold hemagglutinin was present in the plasma during the period of acute illness. The patient also had retinal hemorrhages and loss of visual acuity. Peterson, Ham and Finland observed that phlebothromboses and pulmo-

nary emboli occurred in certain of their patients showing cold agglutinins in the blood. It does not appear improbable, therefore, that the retinal hemorrhages seen in this patient were associated with intravascular clumpings of the erythrocytes, thrombus formation and subsequent damage to the wall of the blood vessels, leading to hemorrhages outside the vessel wall. Improvement in the patient's condition occurred coincident to the administration of 90 units of liver extract on two successive days. Recent experimental observations in animals would appear to justify further study of the effect of liver therapy in the prevention and treatment of macrocytic hemolytic anemia in the human being, particularly those cases occurring subsequent to the administration of the sulfonamides.

Journal National Malaria Society, Tallahassee, Fla.

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American Mobilization for Conquest of Malaria in United States. J. S. Simmons.—p. 7.
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Journal of Nervous and Mental Disease, New York

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Observations Bearing on Presence of Latent Herpes Simplex Virus in Human Gasserian Ganglion. R. B. Richter.—p. 356.
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Michigan State Medical Society Journal, Lansing

43:273-352 (April) 1944

Dermatitis of Wartime Industries in General Practice. H. R. Foerster. —p. 307.
Avitaminosis in Dermatology and Value and Limitations of Sulfa Group in Skin Diseases. O. S. Ormsby.—p. 315.
Establishment of First Public Health Laboratory in United States. E. E. Kleinschmidt.—p. 320.
*Protein Metabolism and Resistance to Infection. P. R. Cannon.—p. 323.

Protein Metabolism and Resistance to Infection.—Cannon points out that when severe food shortage becomes extensive a rising death rate from infectious disease invariably follows. Starvation manifests itself similarly whether due to famine or to disease. Loss of resistance is one of starvation's most conspicuous features. The author relates postmortem and experimental observations which help to elucidate the problem of protein metabolism and resistance to infection. In a series of patients dying from various types of chronic disease, hypoproteinemia was one of the main clinical findings and the high incidence and severity of terminal infections was particularly noteworthy. The author summarizes a number of cases which illustrate the results of severe proteinuria, the consequence of depletion of the protein reserves because of an inadequate intake of the proper kinds of food and the effects of obstructive lesions of the gastrointestinal tract and of other diseases on the blood protein concentration. Protein metabolism in the adult organism in nitrogen equilibrium can no longer be thought of as a static process in which most of the ingested protein is excreted as urea and only a small portion, the so-called wear and tear quota, is replaced. The exchange of nitrogen between the blood and the body tissues is an extremely dynamic process which goes on continuously. Antibody production requires an adequate supply of amino acids. Animals made hypoproteinemic by a prolonged low protein diet but adequate in calories, minerals and vitamins are more susceptible to spontaneous infections. Animals so managed undergo a loss of capacity to fabricate specific antibodies. Rabbits, if subjected to prolonged protein depletion and then vaccinated against a virulent strain of pneumococci, are unable to withstand infective doses of living pneumococci which are largely innocuous to well nourished rabbits similarly immunized and infected. Rebuilding of the protein reserves would seem to be especially important in protein depleted patients about to undergo serious operative procedures. For starving people entering the danger zones of hypoproteinemia, every effort should be made to rebuild the protein reserves. If nitrogenous nutriment tends to restore the integrity of the antibody mechanism and of the phagocytic cells forming in the bone marrow, the processes both of acquired immunity and of natural resistance should function more effectively.

Surgery, Gynecology and Obstetrics, Chicago

78:337-448 (April) 1944

*Treatment of Burn Shock with Continuous Hypodermoclysis of Physiologic Saline Solution into Burned Area: Experimental Study. J. K. Berman, L. Peterson and J. Butler.—p. 337.
Local Skin Lesion in Experimental Burns and Its Relation to Systemic Manifestations. R. Elman and C. Lischer.—p. 346.
*Lateral Rupture of Cervical Intervertebral Disks: Common Cause of Shoulder and Arm Pain. R. G. Spurling and W. B. Scoville.—p. 350.
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*March Fractures of Tibia and Femur. S. E. Proctor, T. A. Campbell and M. Dobelle.—p. 415.
Variations of Female Sacrum: Their Significance in Continuous Caudal Anesthesia. Mildred Trotter and G. S. Letterman.—p. 419.
Incidence of Liver Stones Associated with Cholelithiasis and Its Clinical Significance. R. R. Best.—p. 425.
Fractured Pelvis Complicated by Gangrene of Extremity—Amputation Under Refrigeration Anesthesia. H. E. Mock and E. H. Tannehill. —p. 429.
Comminuted Fractures of Distal End of Radius. R. Anderson and G. O'Neil.—p. 434.

Treatment of Burn Shock with Hypodermoclysis.—According to Berman and his associates treatment of extensive burns must take into consideration (1) curtailment of the loss of plasma at the site of the burn, (2) restoration of lost plasma and electrolytes, (3) facilitation of dilution and excretion of toxins and (4) control of body temperature. If these primary disturbances can be modified, secondary effects such as hemoconcentration, anoxemia, hypochloremia and hepatic and renal insufficiency may be averted to a great extent. In an attempt to lessen the loss of plasma and electrolytes and to facilitate their reabsorption the authors introduced isotonic solution of sodium chloride subcutaneously at a pressure exceeding capillary hydrostatic pressure, namely 40 millimeters of mercury. They report the results obtained with this procedure on dogs. These studies indicate that there is first a loss of water, then plasma into the burned area. This continues until the tissue space pressure equals the hydrostatic pressure within the capillaries. Then reabsorption begins, but in a reverse manner; that is, colloids are returned first by the lymphatics, which behave as a semipermeable membrane; then crystalloids are absorbed by the capillaries. Isotonic solution of sodium chloride injected hypodermically into the burned area in experimental animals

curtails the loss of plasma and electrolytes, makes possible the dilution and excretion of hypothetical toxins, controls body temperature and prevents pulmonary edema and anuria. As a result of these effects survival time is considerably increased in the treated animals. This method has not as yet been employed on human subjects. Its feasibility is apparent and it could be used in addition to intravenous plasma and other methods. It would decrease the amount of plasma necessary in treating extensive burns. The method constitutes autotransfusion of lost colloids and crystalloids, and a method for supplying quickly the great demand for salt by injured tissues.

Rupture of Cervical Intervertebral Disk as Cause of Shoulder and Arm Pain.—Spurling and Scoville think that pain in the arm and shoulder are too frequently called neuritis. They direct attention to the role of the lower cervical intervertebral disks in the production of shoulder and arm pain. Their data were collected from 12 verified cases of ruptured cervical disks. Pain and stiffness of the neck are usually the first symptoms. Not infrequently after the initial bout of stiff neck the patient will experience no further local discomfort. Symptoms may consist entirely of pain into the shoulder and down the arm into the hand. Any sudden movement of the head or neck, coughing, straining or sneezing may intensify the pain or produce a feeling of "electrical shock" into the arm and hand. Accurate localization is usually possible. In case of rupture of the fifth cervical disk there is pain radiating from the neck into the shoulder and arm with paresthesias (needles and pins or numbness) into the posterior aspect of the thumb. Symptoms are always aggravated by tilting the head to the painful side. There is weakness or absence of the tendon reflex of the biceps brachialis muscle. Rupture of the sixth cervical disk is characterized by pain radiating from the neck into the shoulder and arm with paresthesias into the index, middle and perhaps the ring fingers and the tip of the thumb. Symptoms are aggravated by tilting the head to the painful side. There is weakness or absence of the tendon reflex of the triceps brachialis muscle. The lesion can in most instances be accurately verified by pantopaque myelography. Conservative treatment relieves symptoms in many cases; when it fails, operative removal of the lesion is justified.

Solitary Circumscribed Tumors of Lung.—Thornton and his associates state that there is a group of primary lung tumors that arise in smaller, peripheral bronchi. They give rise to indefinite symptoms and are easily confused with solitary metastatic tumors and infections in the lung. This type of tumor may also simulate mediastinal and chest wall neoplasms. These solitary, circumscribed lung tumors constitute about 25 per cent of all primary lung tumors. There have been 23 patients seen at the University of Chicago Clinics in the past ten years with a solitary rounded lesion in the lung that was at least 2 inches in diameter and at some time was considered to be a neoplasm. The characteristic x-ray appearance of these lesions is a solitary, rounded, dense mass in the lung. The symptoms are indefinite, and physical findings are extremely variable and often absent. The usual diagnostic aids generally fail to establish the diagnosis. Exploratory thoracotomy was the surest method by which an accurate diagnosis could be made. When properly done, a thoracotomy carries as little morbidity and mortality as exploratory laparotomy. Surgical treatment at the earliest possible date is the procedure of choice. Occasionally circumscribed opacities in the lung are tuberculomas or chronic lung abscesses, but most often they are primary lung cancers. Solitary metastatic tumors of the lungs are relatively rare. Primary tumors of the lung can usually be differentiated from metastatic tumors at bronchoscopy. The primary tumor arising within the bronchus is usually easily subjected to biopsy, but metastatic tumors occur in the parenchyma and are not visible on bronchoscopy. In differentiating circumscribed tumors from solitary tuberculous lesions it should be remembered that in some cases of tuberculosis there will be other evidence of acid fast infection in the lung fields or calcification within the lesion itself. Calcification is never seen in a malignant lung tumor, although it may be present in benign lung tumor. Mediastinal lesions offer the greatest problems in differential diagnosis. In at least half of the patients it becomes necessary to explore the lesion to make an accurate diagnosis.

Rapid Identification of Clostridium Welchi in Accidental Wounds.—Altemeier says that the most characteristic cultural peculiarity of Clostridium welchi is the stormy fermentation of milk. Using strains which were isolated from accidental wounds, the author studied this reaction regarding its possibilities for application to the direct culture of debrided contaminated tissue. The author has been able to increase the speed and intensity of this reaction to such an extent that a typical reaction will occur within five to ten hours or less. The medium found to be most satisfactory for this purpose can be made as follows: A good grade of fresh pasteurized milk is boiled for five minutes and allowed to cool in a refrigerator for eight to twelve hours. The supernatant cream is removed by siphonage and the remaining milk is placed in culture tubes, 6 to 8 cc. per tube being used. Sterilization is accomplished by heating the milk in a dry oven on three successive days at 120 C. for twenty minutes. When pieces of muscle debrided from contaminated experimental human wounds were placed in suitable mediums a typical reaction occurred in from five to ten hours. During the past two and one-half years the author has used this method successfully at the Cincinnati General Hospital for the rapid detection of the presence or absence of Clostridium welchi in over 600 contaminated and infected accidental wounds. The method has been of value in the early diagnosis of gas gangrene while the infection was still in the incipient or localized stage. Whenever the gas bacillus is detected in tissue debrided from a traumatic wound, the patient is placed under close observation for the earliest symptoms of gas gangrene.

March Fractures of Tibia and Femur.—Proctor and his co-workers describe the clinical, laboratory and roentgenologic characters of 7 tibial march fractures and 1 femoral march fracture encountered in a three month period at the Station Hospital, Camp Reynolds, Greenville, Pa. March fractures are often erroneously diagnosed as Garré's sclerosing osteomyelitis, periostitis, osteogenic sarcoma, bone syphilis and tuberculosis of bone. The patient with march fracture is usually of the tall, fair, Nordic type. The age average was 19 years and 8 months. The onset was usually characterized by sudden pain followed by lameness. These symptoms always occurred during exercise such as sustained marching, double timing or obstacle course running. The serum calcium was consistently low and the serum phosphorus slightly elevated. Therapy consisted chiefly in palliative physical therapy and cessation of all forms of forced exercise such as drills, hikes and obstacle course runs. Immobilizing casts were not applied, and the patient was not hospitalized. The authors report 2 clinical histories. The first patient was a soldier with bilateral march fractures of the tibias. This is the fourth case of the kind to be reported. More of these cases would be discovered if comparison roentgenograms of both tibias were made in suspected march fractures. The second patient had a march fracture of the femur.

West Virginia Medical Journal, Charleston

40:69-100 (March) 1944

Acute Respiratory Infections, Including Virus Pneumonia. H. Field Jr.—p. 69.
Complications of Early Pregnancy. A. P. Hudgins.—p. 75.
Management of Severe Burns. W. E. King.—p. 83.

40:101-132 (April) 1944

Pathology of Intervertebral Disk. W. G. J. Putschar.—p. 101.
Clinical Aspects of Protruded Intervertebral Disk. A. A. Wilson. —p. 107.
Virus Follicles: Foci of Infection in Influenza. M. F. C. Zubak. —p. 112.
History of West Virginia Tuberculosis and Health Association. G. R. Maxwell.—p. 113.

Wisconsin Medical Journal, Madison

43:381-488 (April) 1944

Clinical Value of Liver Function Tests, with Particular Reference to Hippuric Acid Test. A. J. Quick.—p. 399.
Postoperative Care in Abdominal Surgery. C. L. Kline.—p. 404.
Immunization in Pediatric Practice. E. J. Huenekens.—p. 409.
Blast Injuries of Lungs. G. M. Curtis and J. D. King.—p. 413.
Treatment of Typhoid Fever and Typhoid Carriers, with Review of Recent Literature. M. J. Fox.—p. 419.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Diseases in Childhood, London

18:161-202 (Dec.) 1943

*Survival of Transfused Erythrocytes in Hemolytic Disease of Newborn. P. L. Mollison.—p. 161.
Spina Bifida and Its Associated Skull Defects. J. B. Hartley and C. W. F. Burnett.—p. 173.
Children in Tuberculosis Colony: Survey of Papworth Children. E. M. Brieger.—p. 178.

Survival of Transfused Erythrocytes in Hemolytic Disease of Newborn.—Mollison made a quantitative estimation of the survival rate of Rh positive and Rh negative erythrocytes in hemolytic disease of the newborn. He found that in 8 of 9 infants with icterus gravis neonatorum, who were given a transfusion during the first fourteen days of life, the Rh positive erythrocytes were eliminated from the circulation within ten days. In the ninth case elimination was not complete until thirty days after the transfusion. In 4 cases in which Rh positive erythrocytes were transfused after the fourteenth day of life destruction was less rapid and in 2 instances was as slow as that of Rh negative erythrocytes in 2 instances. Rh negative erythrocytes transfused to 21 infants with hemolytic disease survived for not less than eighty days in all but 1 case. In the majority of the cases the rate of elimination appeared to be approximately 1 per cent each day and the total time of survival appeared to be approximately one hundred days. In 5 instances the initial rate of destruction was greater, and in 1 exceptional case only 28 per cent of the donor cells survived seven days after transfusion. Because of the absence of an obvious cause for this more rapid destruction in certain cases, it seems possible that there may be some overlap in the destructive mechanism: it may not always be directed exclusively at Rh positive erythrocytes. The survival of transfused erythrocytes in 1 infant within a few hours of birth, in 1 child aged 11 months and in 1 aged 15 months was estimated and found to correspond closely with that of Rh negative erythrocytes in the majority of cases of hemolytic disease of the newborn. This rate of survival is similar to that which has been found in adults. Approximately 1 per cent of the total number of transfused erythrocytes are eliminated from the recipient's circulation each day after transfusion. When an infant with hemolytic disease of the newborn has to be given a transfusion, Rh negative blood of its own group is recommended when serologic tests have been made and it is fairly certain that destruction is due to anti Rh agglutinins. Group O Rh negative blood is recommended when no tests have been made. Group O blood should be used when destruction is thought to be due to anti A or anti B agglutinins. When destruction is due to agglutinins other than atypical anti Rh, group O blood compatible with the mother's serum is probably the safest. In every case direct matching of the donor erythrocytes against the mother's serum seems a desirable precaution before transfusion.

British Heart Journal, London

5:183-246 (Oct.) 1943

Auricular Fibrillation Late in Course of Diphtheria. A. M. G. Campbell, P. C. Gibson and C. R. T. Lane.—p. 183.
Complete Auriculoventricular Dissociation with High Ventricular Rate in Paroxysmal Tachycardia. C. G. Parson.—p. 187.
Persistent Truncus Arteriosus. R. Marshall.—p. 194.
Coarctation of Aorta, Double Mitral A-V Orifice and Leaking Cerebral Aneurysm. J. N. P. Davies and J. A. Fisher.—p. 197.
Triple Heart Rhythm. W. Evans.—p. 205.
*Treatment of Subacute Infective Endocarditis with Heparin and Chemotherapy. W. T. Cooke and A. B. Taylor.—p. 229.

Heparin and Chemotherapy in Subacute Infective Endocarditis.—Cooke and Taylor state that the incidence of bacterial endocarditis in rheumatic heart disease has been reported to be between 4 and 17 per cent, while in congenital heart disease it is between 14 and 22 per cent. They treated 5 patients with combined chemotherapy and intravenous heparin. All patients died, 1 probably as the result of the heparin therapy. Twenty patients (including the 5 treated with heparin) were treated with sulfonamide compounds. Five were totally unresponsive and 12 were moderately controlled. Life was prolonged in some, but all eventually died. Three patients became apyrexial; 1 died after forty-five days of normal temperature, but as there was no necropsy neither the diagnosis nor the state of the lesion could be determined. A second died one year after the onset of his infection and eight months after the control of his pyrexia by sulfapyridine: necropsy showed healed lesions of infective endocarditis. The third is well and working at his occupation as a milkman twelve months after his discharge from the hospital. Intravenous heparin did not prove of value in these cases. Prolonged chemotherapy offers a chance of cure to a few patients, though the great majority will not be so benefited. The dangers of such prolonged therapy are small and should not weigh against the chances of a successful outcome.

British Journal of Ophthalmology, London

28:49-104 (Feb.) 1944

Hereditary Corneal Dystrophy. J. R. Mutch.—p. 49.
Value of Ophthalmic Treatment in Field. G. C. Dansey-Browning.—p. 87.

28:105-156 (March) 1944

War Surgery of Eye: Analysis of 102 cases of Intraocular Foreign Bodies. H. B. Stallard.—p. 105.
Orbital Cellulitis in Baby Caused by Acute Osteomyelitis of Maxilla. J. A. Magnus.—p. 135.
Wasp Sting. S. W. K. Norris.—p. 139.
*Defective Night Vision Among Soldiers; Dark Adaptation Results and Their Use in Diagnosis. I. C. Michaelson.—p. 140.

Defective Night Vision.—Michaelson investigated the reliability of Koch's dark adaptometer, the normal minimum for form and light perception on the instrument, the minimum form and light senses in subjects complaining of defective night vision and conclusions that might be drawn from these findings in helping to distinguish between psychogenic and organic night visual defect. The instrument is essentially a modified Hecht adaptometer. It is accurate in measuring minimum light and form senses. The normal minimal light and form senses vary but together afford sufficient if not a complete measure of the ability to see in the dark. Persons with defective night vision have a poor minimum form sense, but many persons without defective night vision have also a poor minimum form sense. Measurement of minimum light sense after three minutes dark adaptation in cases of defective night vision does not appear to have much diagnostic significance. Measurement of minimum form sense after thirty minutes dark adaptation of defective night vision does appear to be diagnostically useful. There are indications that in such cases a poor minimum light sense is associated with organic disturbance and a good minimum light sense with functional disturbance as the cause of the defective night vision. Although the groups examined are not large the data are suggestive and sufficient to indicate further investigations and tentative measures in treatment and disposal. Dark adaptometers which measure the minimum form sense and not the minimum light sense have a limited usefulness for two reasons. First, there is a great variation in the minimum form sense among noncomplainers of defective night vision and, secondly, such instruments cannot help in the discrimination between physiogenic and psychogenic defective night vision.

British Journal of Urology, London

15:121-174 (Dec.) 1943

*Infiltrating Carcinoma of Bladder: New Method of Ureterointestinal Anastomosis Employed in 29 Cases; Indications for Total Cystectomy. H. J. Jewett.—p. 121.
Massive Calculus in Vesical Diverticulum. A. W. Adams.—p. 136.
Multilocular Intrapelvic Scrotal Hydrocele. A. C. Lysaght.—p. 140.

New Method of Ureterointestinal Anastomosis in Carcinoma of Bladder.—Radical cure of a large infiltrating cancer of the urinary bladder usually requires total cystectomy. This procedure must be preceded by surgical diversion of the urinary stream. Jewett devised a simple method for establishing a satisfactory ostium. His method consists of ureterointestinal implantation of the intact ureters in two stages combined with total cystectomy at the second stage. When

properly done it usually is followed by no permanent obstruction to the upper urinary tract. In his series of 29 cases in which both stages of the ureteral transplantation have been completed there were only 3 patients who died as the result of the ureterointestinal anastomosis. The causes in 2 of the patients have been determined and subsequently eliminated by improvement in the surgical technic. To be suitable for radical cure by total cystectomy, metastases must be absent and the tumor must be confined to the bladder wall and be freely movable. The latter condition is best determined preoperatively by rectoabdominal palpation under anesthesia. The opposition to total cystectomy for cancer of the bladder, which is otherwise incurable, has been based on two principal considerations. The results of rerouting the urinary stream have been too uncertain, and a surgical procedure which contemplates two laparotomies seemed too formidable. These objections should be largely eliminated by the results obtained in this series of 29 cases.

British Medical Journal, London

1:139-172 (Jan. 29) 1944

Localized Subcutaneous Edema with Weakness of Limb Muscles: Syndrome Due to Polyarteritis Nodosa. R. MacKeith.—p. 139.
Emphysema of Lungs. R. V. Christie.—p. 143.
Infant Feeding in Relation to Mortality in City of Belfast. J. Deeny and E. T. Murdock.—p. 146.
Unusual Case of Cerebral Malaria. C. S. D. Don and P. F. Meyer.—p. 149.
Effects on Rats of Prolonged Feeding with Staple African Diet. J. Gillman.—p. 149.

1:173-208 (Feb. 5) 1944

Principles of Reform in Medical Education. F. M. R. Walshe.—p. 173.
*Pethidine as an Obstetric Analgesic: A Report on 150 Cases. Bedelia Gallen and F. Prescott.—p. 176.
*Obstetric Analgesia with Pethidine. W. Spitzer.—p. 179.
Bone Marrow as a Site for Reception of Infusions, Transfusion and Anesthetic Agents: Review of the Present Position. H. Bailey.—p. 181.
Staphylococcal Septicemia Treated with Sulfadiazine. H. B. Norman.—p. 183.
Spontaneous Rupture of Abnormally Mobile Spleen. J. Dubash and G. F. Langley.—p. 183.

Pethidine (Demerol) as Obstetric Analgesic.—Gallen and Prescott used demerol to induce analgesia in 150 obstetric cases. Detailed records were kept for the first 100 patients, of whom 70 were primigravidas and 30 multigravidas. All were normal on medical and obstetric examination. Since oral administration of demerol was found unsatisfactory on account of frequent vomiting and slow action, the drug was given either intramuscularly or intravenously or by the combined routes. Two schemes of dosage were found to give satisfactory results: (*a*) an initial dose of 100 mg. intramuscularly, repeated one hour later with a chloral-bromide-opium mixture or with scopolamine; (*b*) 100 mg. of demerol intravenously followed by 100 mg. intramuscularly an hour later, either alone or with 1/150 grain (0.4 mg.) of scopolamine. With either technic further intramuscular injections of 100 mg. can be given up to a total of 400 mg. in twenty-four hours. The first injection is best given when the cervix is dilated to 2 fingerbreadths and the patient is having regular contractions. Demerol and scopolamine form an effective combination for producing obstetric analgesia. Demerol does not, however, produce amnesia unless given with adequate doses of scopolamine and barbiturates. Only 5 per cent of the patients failed to obtain relief from demerol. Analgesia was complete or satisfactory in 60 per cent. Given intravenously, demerol produces analgesia in five to ten minutes; intramuscularly, in fifteen. The duration of action is three to four hours. Intravenous administration produces a more rapid and powerful initial action, but intramuscular administration is highly satisfactory and equally effective. Intravenous administration is contraindicated in labor complicated by toxemia or hypertension. Demerol has a definite antispasmodic action on the cervix. In comparison with controls demerol appeared to prolong labor. This was probably due to the selection of the cases. The figures compare well with average figures for the duration of labor. No increase in the incidence of instrumental delivery or obstetric complications was associated with the use of demerol. Reactions in the mother included vomiting, temporary rise of blood pressure, dizziness, tingling of the limbs and dryness of the throat. These were transient and, although unpleasant, gave no cause for alarm. Of the babies 91 per cent were apparently normal and active at birth; 9 per cent were slow and required resuscitation. There were no deaths among the babies that could be attributed to demerol.

Obstetric Analgesia with Pethidine.—Spitzer investigated demerol hydrochloride for its analgesic and spasmolytic effect on 80 normal mothers in the early first stage of labor. About 17.5 per cent were greatly relieved; 72.5 per cent had good relief, and 10 per cent had no relief. The behavior of excited patients was improved. Primiparas and multiparas were relieved equally. For reasons of safety the oral route of administration was used. The effect of a 25 mg. dose appeared in twenty to thirty minutes and lasted one to four hours. The optimum pain response seemed to occur with a 25 mg. dose repeated after a half hour (two doses). Recent observations in an additional 50 cases revealed that with a single 50 mg. dose and a 25 mg. dose occasionally added 22 per cent of the patients showed complete relief. Demerol (pethidine) had in the majority of cases no objectionable side effects on mother or baby. In 3 mothers transient vomiting and bradycardia were noted. Twice a transient depression in the fetal heart sounds developed, and 5 babies showed a mild degree of asphyxia. The progress of labor was not delayed. Demerol had a remarkable shortening effect on the duration of normal labor, possibly by its direct relaxing action on the uterine cervix. In elderly primiparas with rigidity of the soft parts, the influence on the dilatation period was favorable. No harmful effects on uterine tone or perineum by the shortening of labor were observed, apart from 2 cases of postpartum hemorrhage and 1 of second degree perineal tear. Demerol hydrochloride if carefully dosed and timed is a useful analgesic and spasmolytic drug in obstetrics.

1:209-244 (Feb. 12) 1944

Studies on Hepatic Dysfunction: I. Carbon Tetrachloride Poisoning Treated with Casein Digest and Methionine. J. Beattie, P. H. Herbert, C. Wechtel and C. W. Steele.—p. 209.
Clinical Evaluation of Some Tests of Liver Function. G. Higgins, J. R. P. O'Brien, Alice Stewart and L. J. Witts.—p. 211.
Some Uses for Dry Cold Therapy and Proposed Cooling Cabinet. W. G. Bigelow and E. C. G. Lanyon.—p. 215.
Etiology of "Immersion Foot." B. W. Goldstone and H. V. Corbett.—p. 218.
Results of External Prophylactic Version. M. V. Trubkowitch and B. A. Archangelsky.—p. 220.

1:245-278 (Feb. 19) 1944

*Some Observations on Hospital Dust, with Special Reference to Light as Hygienic Safeguard. L. P. Garrod.—p. 245.
Transmissibility of Hemolytic Streptococcal Infection by Flies. R. A. Shooter and Pamela M. Waterworth.—p. 247.
Haldane Hemoglobinometer: I. Iron, Oxygen, and British Standards Institution Color Standard. R. G. MacFarlane and J. R. P. O'Brien.—p. 248.
Hemoglobin Equivalent of B. S. I. Haldane Standard. E. J. King, Margaret Gilchrist and Audrey Matheson.—p. 250.
*Cadmium Poisoning. P. Ross.—p. 252.
Dry Blood Test for Typhus Fever: Preliminary Report. P. N. Bardhan, N. Tyagi and K. Boutros.—p. 253.

Hospital Dust.—Garrod states that, under the conditions existing in some of the hospital wards studied, dust was so infective that, without the aid of any other vehicle, it could well have caused all the accidental infections observed. It was found that in wards where there are patients with hemolytic streptococcus infections dust may contain these organisms in large numbers, particularly near infected patients' beds. Hemolytic streptococci were found to be most numerous in floor dust and were absent from many specimens of dust in the same wards collected from sites on or close to the windows. They were more often found in dust from exceptionally dark wards than in comparable specimens from normally lit wards. Hemolytic streptococci of group A, type 11, in naturally infected dust survived in small numbers in the dark at room temperature for 195 days. Ordinary diffuse daylight is bactericidal to hemolytic streptococci. The interposition of glass does not prevent this effect, and it occurs even under winter conditions in England. These facts suggest the possibility that good natural lighting may be a factor in preventing the atmospheric spread of infection in surgical wards and elsewhere.

Cadmium Poisoning.—Ross mentions the following industrial uses of cadmium: the process of plating; the preparation of certain fusible alloys; the manufacture of specialized solders, dry batteries, paints, pigments and metal bearings, and in the car and armaments industries. The industrial risks occur during the smelting of ores, the preparation and flame cutting of cadmium alloys, cadmium welding, electroplating and metal spraying. It is not universally realized that finely divided cadmium is inflammable, producing dangerous fumes of cadmium oxide. The author reports an outbreak of cadmium poisoning which occurred when a workman, while cleaning out a cadmium recovery chamber, dropped some red hot ash from a lighted cigaret on the floor and ignited the cadmium dust deposited there. (The man was smoking, contrary to regulations.) As the metal was in a finely divided state it began to glow and soon became a red hot mass emitting yellowish brown smoke of cadmium oxide. Within a few minutes the wood and canvas filter frames were blazing furiously. The fumes filled the shop rapidly and affected 23 persons. The immediate effects noted were dryness of the throat, constriction of the chest, cough, and weakness of the legs. Two complained of irritation of the eyes, and a few others had headache and giddiness. Delayed effects began to manifest themselves about three hours later. Nausea, epigastric pain, precordial constriction, dyspnea and prostration were fairly constant symptoms, and ague occurred in 14 cases. In the event of prolonged exposure pneumonia may supervene, and in fatal cases there may be signs of kidney and liver involvement. No fatality occurred in this series. The author describes 1 typical case. A survey of the incapacity caused by the accident shows that of the 23 men involved 7 lost no time, while 4 were absent for one day, 3 for six days, and 1 for nine days. Of the more seriously affected, 1 was away for four weeks, another for seven weeks, and the fireman, who had pneumonia, was disabled for two months. In the event of a fire in a department where cadmium is used the firemen must wear suitable respirators. The rule "No smoking" should be strictly enforced where cadmium powder is present.

1:279-314 (Feb. 26) 1944

Fainting in Blood Donors. Report by Subcommittee of Blood Transfusion Research Committee.—p. 279.
Pulmonary Tuberculosis of Bovine Origin, with Notes on Bovine Infection in Three Families. L. J. Cutbill and A. Lynn.—p. 283.
Patch Testing in East Coast Town. Elenora J. Simpson.—p. 286.
*Sulfaguanidine in Treatment of Flexner Dysentery. H. G. Smith.—p. 287.
Hemolytic Disease of Newborn: Preponderance of Homozygous Rh Positive Fathers. G. L. Taylor and R. R. Race.—p. 288.

Sulfaguanidine in Flexner Dysentery.—Smith reports the results of administering massive doses of sulfaguanidine to 44 young women between the ages of 17 and 37 with Flexner dysentery. Five consecutive negative results were obtained for each patient after conclusion of the treatment. About the ninth day of the treatment 21 patients developed a toxic rash. Apart from one circinate urticaria, the rashes were pink and morbilliform. The presence of a scarlatiniform and a petechial type was noted among the latter. There was no relation to a high blood concentration of the drug. Eight patients out of 12 reacted to a sensitization dose of sulfaguanidine. In some cases the constitutional upset was severe. There was no response to sensitization doses of other sulfonamides. It is suggested that the guanidine radical may be the sensitizing agent. The high incidence of toxic rashes suggests care in dosage.

1:315-348 (March 4) 1944

Cranial Nerve Palsies with Herpes Following General Anesthesia: Report from Central Middlesex County Hospital. J. H. Humphrey and Margaret McClelland.—p. 315.
Hazards in Use of Closed Circuit Technic for Trilene Anesthesia. S. Carden.—p. 319.
Intelligence and Season of Conception. J. A. F. Roberts.—p. 320.
*Bacillary Dysentery in Dundee: Comparative Study of Treatments. W. H. Jamieson, J. Brodie and D. Stiven.—p. 322.
Meningococcal Jaundice. C. Crawford.—p. 325.

Treatment of Bacillary Dysentery.—Jamieson and his collaborators set forth the clinical and bacteriologic results obtained in 200 confirmed cases of bacillary dysentery. Attention was given to the effects of different methods of treatment not only on the course of the disease but also on the incidence of the carrier state in convalescence. The diagnosis of dysentery was confirmed both clinically and bacteriologically in all of the 200 cases. In the 50 patients who were treated with aperients an initial dose of castor oil was given followed by thrice daily doses of magnesia magma for children and of sodium sulfate for adults, the dosage being reduced as abnormal constituents disappeared from the stools. Sulfaguanidine was used for 100 patients, and the remaining 50 patients were treated with chalk mixture. Abundant fluid was given to all three groups of patients. The authors found that the use of sulfaguanidine in bacillary dysentery gives results superior, both clinically and bacteriologically, to those from aperients and chalk, but, even so, 30 per cent of cases are still bacteriologically positive in convalescence, as compared with 50 per cent with the other treatments. The employment of the enrichment technic is amply justified, while direct plating, used alone, can yield a false sense of security as regards freedom from infection. During convalescence no less than 36 per cent of the positive results were obtained only by the enrichment method. Moreover, a number of cases would not have been confirmed bacteriologically and a further number would have been discharged prematurely had not the enrichment technic been employed. The convalescent carrier rate in the sulfaguanidine series was lower than in the other two, but the difference would have been even more striking had only direct plating been employed; for without enrichment the percentage of cases positive after sulfaguanidine would have fallen from 30 to 19 as compared with from 50 to 38 per cent and from 52 to 46 per cent after aperients and chalk respectively.

Journal of Royal Army Medical Corps, London

82:51-98 (Feb.) 1944

Hygiene Visit to the Ancient World. M. Markowe and A. W. S. Thompson.—p. 51.
*Outbreak of Smallpox in British Troops with Note on Use of Sulfathiazole in Treatment. A. W. D. Leishman.—p. 58.
Effects of Common Anesthetics on Circulation. V. Keating.—p. 63.
Investigation of Outbreaks of Dysentery at Military Hospital in South Africa. M. H. Finlayson.—p. 68.
Lightning and Central Nervous System. J. H. Paterson and J. W. A. Turner.—p. 73.
De Excretico Comburendo, or Auto-da-Fece in the Western Command. R. A. Mansell.—p. 76.

Sulfathiazole for Smallpox in British Troops.—Leishman says that during the period from November 1942 to April 1943 there was an epidemic of smallpox among the civil population of the area of India in which his base hospital was located. The British troops in the neighborhood were soon affected and altogether 68 patients with smallpox were admitted to the author's hospital. They were almost invariably admitted to the hospital in the preeruptive stage as having undiagnosed fever and it proved impossible to distinguish smallpox from simple fevers and malaria. It became necessary to operate an "observation ward" to which every patient with fever was first admitted. In this ward barrier, patients were isolated for a minimal period of three days or until such time as the possibility of smallpox could be ruled out. Every patient, whatever his complaint, was vaccinated on admission unless he had evidence of successful vaccination within the last twelve months. Universal vaccination during an epidemic is not without its risks. At least 4 of the patients had an aggravated form of the disease from being vaccinated while already incubating smallpox; 2 of these died. The most consistently useful diagnostic sign was the finding of even a single vesicle which showed umbilication. The local therapeutic measures were those usually recommended; spraying or painting the skin with 5 per cent potassium permanganate or dilute phenol (1:40), mouth washes and inhalations, and mild protein silver and atropine drops for the eyes when the conjunctivas were involved. Warm permanganate baths were given as soon as the condition permitted it. Xylene was given in doses of 30 minims (1.8 cc.) in milk, at first four times daily and later three times and then twice daily, but no dramatic results were observed. Sulfapyridine, which was given in an average total dose of 30 Gm., did not appear to influence the disease. Sulfathiazole was given to 12 patients. Results suggest that this drug is more effective than the other sulfonamides and that it merits further trial.

Lancet, London

1:139-170 (Jan. 29) 1944

Psychosomatic Casualties in the Middle East. A. Torrie.—p. 139.
*Trifin Nail and Plate for Pertrochanteric Fractures. G. K. McKee. —p. 143.
*Hemolytic Disease in the Newborn: The Rh Factor. F. A. Langley and F. Stratton.—p. 145.
Diabetogenic Action of Alloxan. H. Hughes, L. L. Ware and F. G. Young.—p. 148.
Notes on Typhus Fever in the Middle East. W. Brockbank and S. R. F. Whittaker.—p. 150.
Portal Pyemia with Recovery. N. Alders.—p. 151.

Trifin Nail and Plate for Pertrochanteric Fractures.—In pertrochanteric fractures the line of fracture is always much lower posteriorly than anteriorly. This renders the lower fragment difficult to hold, because as the bone of the lateral femoral cortex rapidly increases in thickness below the trochanteric region it is particularly liable to split into the line of the fracture posteriorly when an attempt is made to insert a nail. A plate which would be fixed to the head of the nail and screwed into the lateral aspect of the shaft of the femur seems to be a simple answer to the problem. In McKee's series of 17 cases this form of treatment has been surprisingly successful as a means of fixation, and, although the operative technic is slightly more difficult than the simple insertion of a nail, the degree of fixation and the ultimate results seem to be superior. The more secure hold obtained by the nail and plate compared with that obtained by the nail alone has made it possible to get these patients up earlier, and the length of stay in bed has been reduced from six weeks (as for a transcervical fracture) to three weeks. In an exceptional case in which there has been excessive comminution at the site of fracture, this period of recumbency will have to be longer. After three weeks the patients are instructed to walk with crutches, and this partial weight bearing is continued for twelve weeks at least, when a roentgenogram is made; if there is evidence of union, weight bearing with two sticks for four weeks more is recommended. If this after treatment is adopted, there does not seem to be any tendency to adduction deformity, provided the operation was mechanically sound. No additional fixation, such as a plaster of paris spica, is required. The author concludes that the combination of the trifin nail and the flanged plate is the most satisfactory method of internal mechanical fixation for pertrochanteric fractures of the femur.

The Rh Factor in Hemolytic Disease of the Newborn.—Langley and Stratton investigated 21 cases of hemolytic disease of the newborn clinically, pathologically and serologically. They were able to confirm the relation of this condition to the Rh factor, and in 19 of 21 cases an anti Rh agglutinin was found in the maternal blood. Of 12 necropsies, 11 showed the characteristic extramedullary hemopoiesis of hemolytic disease of the newborn. The breast milk of 10 of the mothers was examined, and 7 samples were found to contain the anti Rh agglutinin.

1:171-202 (Feb. 5) 1944

Erythroblastic Anemia of Childhood (Cooley's Anemia) in Cyprus. A. L. Fawdry.—p. 171.
Postnasal Swab in Diagnosis of Pertussis. R. Cruickshank.—p. 176.
Apparatus for Administering Oxygen. W. I. Card, W. J. Griffiths and B. A. McSwiney.—p. 177.
*Thiourea Causing Granulopenia and Thrombopenia. P. B. Newcomb and E. W. Deane.—p. 179.
Vitamin C Nutrition in Hospital: with Observations on Case of Scurvy. F. T. G. Prunty and C. C. N. Vass.—p. 180.
Meniscectomy in Soldiers: Review of Cases Discharged from an Army Convalescent Depot. J. J. R. Duthie and J. G. MacLeod.—p. 182.

Thiourea Causing Granulopenia and Thrombopenia.—Newcomb and Deane think that, although it is still a question whether thiourea will be used as a long term treatment in place of surgery for exophthalmic goiter, it is suggested as a good method of preoperative treatment. The authors used it for a woman with a moderately severe degree of thyrotoxicosis. After a total of 83 Gm. of thiourea had been given over a period of five weeks the woman suddenly had two epistaxes and then developed generalized purpura and ecchymoses, with spots on the buccal mucous membrane, which ruptured leaving painful ulcers. Thiourea was immediately stopped. The second day after the purpura was first seen the leukocytes had fallen to 3,700 with 16 per cent polymorphs, and there were only 9,000 platelets. Following transfusion of a pint of fresh blood, bleeding from the gums ceased and the blood count gradually returned to normal. The purpura and ecchymoses faded and there has been no further hemorrhage. During the time this patient was in the hospital no other drugs had been given, and it seems fairly certain that the toxic effects were due to thiourea.

1: 203-234 (Feb. 12) 1944

*Anaerobic Infections in Tripolitania and Tunisia. J. D. MacLennan. —p. 204.
Supplementary Feeding in Pregnancy. Margaret I. Balfour.—p. 208.
Adolescent Kyphosis. T. J. B. A. MacGowan.—p. 211.
Rhesus Antibody in Rh Positive Mother Causing Hemolytic Disease of Newborn. A. J. McCall, R. R. Race and G. L. Taylor.—p. 214.
Fitting Industry to Human Needs: Contribution of Medicine to Industrial Well-Being. T. A. L. Davies.—p. 223.

Anaerobic Infections in Tripolitania and Tunisia.—MacLennan states that when fighting moved from the Western Desert to the more cultivated areas of Tripolitania and Tunisia the incidence of gas gangrene increased from 3.4 per thousand wounded to approximately 6 or 7 per thousand wounded. In 28 of 44 cases of gas gangrene a major artery had suffered severe trauma; in 1 other instance a major vein was injured. In only 2 cases had the infection been apparently precipitated by long continued application of a tourniquet. The wounded from small skirmishes between patrols were often evacuated with difficulty and after some delay and were therefore more liable to gas gangrene than those injured in pitched battles; the figures being 8 or 9 per thousand wounded in patrol encounters as against 2 or 3 per thousand wounded in battles. "Clostridial myositis" is preferable, as a descriptive term, to "gas gangrene." Gas is often abundant in anaerobic cellulitis, but in true clostridial myositis it is rarely a prominent feature until late in the disease. The essential features of clostridial myositis are pain, swelling, edema and a rapidly increasing toxemia. Of 44 patients, 13 died. The recovery rate of 70 per cent, which compares favorably with other recorded series, is attributed to accurate diagnosis, good surgery and intensive serotherapy. Antitoxin must be administered early, repeatedly and in adequate amounts, intravenously or intramuscularly; three ampules may be regarded as a minimum therapeutic dose. As long as toxemia persists, antitoxin therapy must continue. It appeared that conservative but adequate surgical procedures aided by chemotherapy, intensive serotherapy and appropriate measures of resuscitation gave better results than more drastic operative measures.

1:235-266 (Feb. 19) 1944

Fractures of Femoral Shaft: Mechanics of Reduction and Fixation. J. Charnley.—p. 235.
Accuracy of Hemoglobin Methods. E. J. King, Margaret Gilchrist and G. E. Delory.—p. 239.
Early Rehabilitation in Abdominal Surgery. A. Shorter.—p. 243.
Acute Necrosis of Liver: An Unusual Case. E. R. Van Langenberg. —p. 244.
Peripheral Arterial Embolism. L. W. C. Massey and P. Steiner. —p. 245.
Sulfapyridine Anuria Treated by Unilateral Renal Decapsulation. F. L. K. Lewis.—p. 247.
Aseptic Cavernous Sinus Thrombosis, with Recovery. H. S. Le Marquand and E. G. Recordon.—p. 247.

1:267-298 (Feb. 26) 1944

Prevention of Neonatal Disease and Death. L. G. Parsons.—p. 267.
Prolonged Post-Traumatic Amnesia: Findings at Operation. A. A. McConnell.—p. 273.
Hippuric Acid Liver Function Test During Treatment with Arsenicals. R. W. Riddell and T. E. Anderson.—p. 275.
Sulfamezathine in Lobar Pneumonia: Comparison with Sulfapyridine. G. Melton.—p. 277.

1:299-328 (March 4) 1944

Penetrating Wounds of Chest: Review of 291 Cases in Middle East. W. F. Nicholson and J. G. Scadding.—p. 299.
Measurement of Circulation Time with Saccharin. F. P. Duras.—p. 303.
*Penicillin in Sulfonamide Resistant Pneumonias, with Special Reference to Staphylococcal Infection and Empyema. T. I. Bennett and T. Parkes.—p. 305.
Complications of Trilene Anesthesia. A. R. Hunter.—p. 308.
Pneumonoconiosis in Boiler Scalers. P. G. Todd and D. Rice.—p. 309.

Penicillin in Sulfonamide Resistant Pneumonias.—During the period before and after Christmas 1943, Bennett and Parkes tested the value of penicillin in a group of serious pulmonary infections. The cases were chiefly complications of

influenza, which at times reached the proportions of an epidemic. The cases were selected in that there appeared to be danger of death and sulfonamide treatment had been resisted. They were further selected in that treatment was adopted only after laboratory demonstration that the invading organism was sensitive to penicillin. Reports are presented of 4 cases of staphylococcic pneumonia, 2 of streptococcic empyema and 1 of staphylococcic empyema. Of these cases, 6 were wholly and 1 partially resistant to sulfonamide therapy. In all, penicillin was administered, with complete recovery. The observations on these patients must not be thought to suggest that penicillin is of supreme value in the treatment of influenza. All cases were seen late in the disease, when secondary infection was well established, and there is at present no evidence to suggest that penicillin will abort the primary infection, usually believed to be due to a virus. Moreover, nearly all cases were staphylococcic infections, and past experience has been that the staphylococcus is a rare invader during epidemic influenza. These observations suggest that penicillin in no way alleviates the profound debility which follows complicated influenza. The fact that 4 patients with severe staphylococcic bronchopneumonia recovered strongly suggests that penicillin is of great value in the treatment of this serious complication, but staphylococcus invasion of the lung is rare. The observations on the cases of empyema suggest not only that penicillin by local injection combined with systemic treatment offers the prospect of cure in severe and sulfonamide resistant cases but that it can even bring about a cure without rib resection in cases in which the pleural cavity already contains large quantities of pus.

South African Medical Journal, Cape Town

17:375-388 (Dec. 25) 1943

Evidence of Vitamin B Deficiency in Orange Free State Natives. C. A. Luckhoff.—p. 375.
Nutritional Basis of Cape Town Poverty Datum Line Reexamined with Reference to National Nutrition Council Standards. E. Batson.—p. 377.
Note on Jigger Flea (Tunga Penetrans) Infestation in Man. B. A. Dormer, J. Friedlander and F. J. Wiles.—p. 382.
Repellents in Malaria Control. S. Annecke.—p. 383.
Rapid Mastic Flocculation and Wassermann Tests Compared. A. T. Neser.—p. 386.
*Comparative Bactericidal Efficiency of Atabrine, Sulfapyridine, and Sulfanilamide Against Various Pathogenic Organisms. W. Campbell and F. G. Gilchrist.—p. 387.
Experiments on Atabrine Therapy of Undulant Fever from Brucella Abortus. W. Campbell and F. G. Gilchrist.—p. 389.
Occurrence of Sickle Cell Trait in Blood of Bantu. R. B. English.—p. 389.

Bactericidal Efficiency of Atabrine, Sulfapyridine and Sulfanilamide.—Campbell and Gilchrist devised tests to compare the bactericidal efficiency of atabrine with sulfapyridine and sulfanilamide against various pathogenic bacteria in broth, serum and blood. They arrive at the following conclusions: 1. The bactericidal efficiency of atabrine is slightly enhanced in the presence of serum, which is in accordance with the findings of Browning and his co-workers with other flavine derivatives. 2. The bactericidal efficiency of atabrine is greater than either sulfapyridine or sulfanilamide with respect to beta-hemolytic streptococcus and pneumococcus. 3. The bactericidal efficiency of atabrine against Staphylococcus aureus in human whole blood was found to be less than that of sulfapyridine and sulfanilamide. However, the bactericidal effect of all three drugs was found to be greater in human than in rabbit's blood. 4. The bactericidal efficiency of atabrine against beta-hemolytic streptococci was found to be 25 per cent to 17 per cent greater than sulfanilamide in rabbit's whole blood and in dilutions of 1/5,000 to 1/20,000. Both these drugs were more efficient than sulfapyridine. 5. The bactericidal efficiency of atabrine in rabbit's whole blood against pneumococci is from 8 per cent to 23 per cent greater than sulfapyridine in dilutions of 1/5,000 to 1/20,000, and 12 per cent better at 1/50,000. This is significant in the light of de Hecht's claim that more than half the dosage of atabrine is absorbed and held by the liver and lungs. 6. There is proof that atabrine, like other flavine dyes and also sulfanilamide and sulfapyridine, does not inhibit phagocytosis, and that the final bactericidal effect is the sum of the bactericidal activity of the drug and the phagocytic activity of the leukocytes.

Transactions Royal Soc. Trop. Med. and Hyg., London

37:169-224 (Dec.) 1943

Influence of Slave Trade in Spread of Tropical Disease. H. H. Scott.—p. 169.
Jaundice of Obscure Origin in El Obeid, Kordofan Province, Sudan. R. W. Stephenson and R. Kirk.—p. 189.
*Causation of Tropical Ulcer. A. D. Charters.—p. 205.
Foot Lesions in Africans. M. J. G. Furnell.—p. 217.
An Unusual Case of Quinine Idiosyncrasy. K. Braun, J. Czertok and W. Kornblueth.—p. 221.

Causation of Tropical Ulcer.—Charters stated that of 570 East Africans admitted to a field ambulance during the six months between November 1942 and May 1943 only 1 had a tropical ulcer. On the other hand, out of 292 Somali soldiers admitted during the same period 143 were affected with sloughing phagedena. Converting these figures to percentages, he found that 49 per cent of the Somali soldiers admitted were suffering from tropical ulcer, as opposed to under 0.2 per cent of the East Africans. The Somalis and East Africans live under identical conditions of climate, and other conditions are similar, with one exception: They differ in their diet. The author analyzed the diets, particularly with regard to the vitamin A content. In Abyssinians in East African units, who refused the East African rations, typical tropical ulcers developed. Tests on 135 patients suggest that vitamin A deficiency is a major factor in the causation of tropical ulcer. Prophylactic measures based on this theory consist in the administration of a carotene rich substance, such as Abyssinian sweet pepper, green chillies or lettuce.

37:225-286 (Feb.) 1944

*Bacteriophage Therapy in Bacillary Dysentery. J. S. K. Boyd and B. Portnoy.—p. 243.
Serologic Examination and Cutaneous Test in Diagnosis of Bacillary Dysentery. F. Dreyfuss and J. Gurevitch.—p. 263.
Pentamidine in Prevention and Treatment of Trypanosomiasis. L. Van Hoof, C. Henrard and E. Peel.—p. 271.
Sickling Phenomenon in Blood of West African Natives. R. W. Evans.—p. 281.

Bacteriophage Therapy in Bacillary Dysentery.—Boyd and Portnoy had an opportunity to investigate the therapeutic value of bacteriophage therapy in bacillary dysentery, when large quantities of bacteriophage were captured during the Axis retreat from El Alamein. It was decided to use dysentery bacteriophage in the treatment of cases of bacillary dysentery occurring among German prisoners of war. Camps in which prisoners of war are incarcerated are divided into sections or cages which are more or less identical. In the prisoner of war camp selected for the trial, two separate but strictly comparable communities were created by a random grouping of cages into two series. Dysentery patients from one series received bacteriophage treatment, those from the other did not. A further cage was set aside for a small experiment in prophylaxis. The German bacteriophage preparation was tested for potency against stock cultures of dysentery bacilli, typhoid-paratyphoid bacilli and a recently isolated strain of Escherichia coli. Parallel titrations were made with a French bacteriophage sponsored by d'Herelle and with an Alexandrian bacteriophage. It was found that the German dysentery bacteriophage was of high potency and wide polyvalence. In both these respects it was superior to the French and Alexandrian preparations. The potency of the German dysentery bacteriophage was tested also against strains isolated in the course of the investigation. All strains tested were found to be susceptible to the action of this bacteriophage. From tests on the feces of a number of patients under treatment with this preparation it can be concluded that bacteriophage reaches the bowel and is present in the stools in an active condition and in considerable quantity. No prophylactic action was found to result from a three day administration of bacteriophage. The incidence of dysentery in a community treated with bacteriophage at the first sign of diarrhea was no different from that in a control community. Neither the severity nor the duration of the attack in the bacteriophage treated group was less than in the controls. Dysentery bacilli were recovered from the stools after the bowel had been exposed for as long as four days to the action of bacteriophage. It is concluded that bacteriophage fails to exercise in vivo the potent properties which it exhibits in vitro.

Book Notices

Handbook of Nutrition: A Symposium Prepared Under the Auspices of the Council on Foods and Nutrition of the American Medical Association. Reprinted from the Journal of the American Medical Association with Additions. Cloth. Price, $2.50. Pp. 586. Chicago: American Medical Association, 1943.

This volume represents a valuable and timely addition to the literature of nutrition. A compilation of papers by twenty-eight of the leading American authorities in the clinical, biochemical and physiologic aspects of the field, it is complementary to an earlier volume, "The Vitamins: A Symposium," published in 1939 under the auspices of the Council on Pharmacy and Chemistry of the American Medical Association.

Broader in scope than the earlier symposium, it should be studied with care by clinicians, nutritionists and dietitians—in fact by all who are concerned with the broad and numerous problems of human metabolic economy. Its publication now is a notable service to physicians and to their colleagues in related fields. Appearing in wartime while clinicians everywhere are confronted with often unfamiliar and perplexing nutritional problems, it can be considered a signal contribution to the war effort, for it provides much of the best and latest information on a subject in which the limited knowledge of many physicians has been reflected in often unwarranted demands on local ration boards for extra fats, carbohydrates or proteins and in the indiscriminate prescription of vitamins in the mistaken belief that they will provide an occult source of energy and health not obtainable in a well balanced diet.

Like Pilgrim's Progress, the path of food from its points of biologic origin through the intestine of man to his living tissues is a devious and often hazardous one, beset along the way with many pitfalls which may impair its ultimate metabolic value. The illumination cast by modern research on this path is one of the fascinating chapters in the scientific history of a century in which the kitchen art of food preservation has become the science of food technology.

Among the subjects considered in this volume are the role of proteins, fats, calories, common and trace elements, fat and water soluble vitamins, salt and water in human nutrition. Maynard contributes an authoritative chapter on foods of plant origin and Sherman on foods of animal origin. Kohman's discussion of preservation in processing of the nutritive value of foods provides valuable insight into some of the problems encountered in the processing industry, especially as they apply to the newer technics of preservation by freezing and dehydration. Wilder and Keys, in a chapter on unusual foods, call needed attention to the economic waste entailed in relegating skim milk, whey, animal organ meats and other products of high human nutritive value to cattle and poultry feeds and to fertilizer. Tuohy's discussion of geriatric nutrition perhaps serves best to illustrate how little scientific data we have on the effect of diet on the course and processes of aging. Stiebeling contributes a useful summary of available data on the adequacy of American diets. Kruse's chapter on the medical evaluation of nutritional status should be read critically in view of his claim, unjustified by present available evidence, to be able to detect "specific biomicroscopic changes in four deficiency diseases: in the conjunctiva in avitaminosis A, in the cornea in ariboflavinosis, in the tongue in aniacinosis, and in the gums in avitaminosis C." The specificity of the lesions emphasized by Kruse has been rightly questioned, and surveys purporting to reveal an extraordinarily high incidence of deficiency disease in certain population groups, based on Kruse's claims, tend to discredit the work of more cautious and critical investigators.

A variety of new laboratory technics as well as carefully accumulated clinical observations are providing much needed information, but it is evident that the evaluation of nutritional status is still far from an exact science.

Holt's recent observations on the bacterial synthesis of thiamine in the human intestine may, if confirmed, necessitate reevaluation of many earlier studies and the postulates derived from them. The same may apply to others of the B group of water soluble vitamins. Not yet can the physician dispense with clinical acumen and a sound knowledge of fundamental nutritional physiology. To the reinforcement of these the Handbook of Nutrition should be a substantial aid.

Criminal Careers in Retrospect. By Sheldon and Eleanor Glueck. Harvard Law School Studies in Criminology. Cloth. Price, $3.50. Pp. 380. New York: Commonwealth Fund; London: Oxford University Press, 1943.

Sheldon and Eleanor Glueck are probably the leading experts on the prediction of future behavior in criminals and juvenile delinquents. They have made a scale for predicting behavior which is apparently quite worth while, and they have studied the careers of many offenders who have served time in institutions for adult and juvenile offenders of both sexes. At the end of each five year period since the beginning of their studies they have submitted a report on the value of penologic treatment of one sort or another, and the present volume is the report on the third five year period. The various factors which make for success or failure on probation are summarized, and tables are included to show the various conditions and classes of conditions operating on the various offenders.

In addition, several individual case studies have been followed up to analyze the factors which have made for later failure or success in the community. The best chapters in this volume are those on criminal careers, environmental circumstances, family relations and assumption of economic responsibilities, work and use of leisure, criminal conduct, differences between reformed and unreformed and serious and minor offenders, and reasons for relapse into delinquency.

There is a second part dealing with the response of offenders to penocorrectional treatment, behavior during penocorrectional treatment and successes and failures during extramural and intramural treatment, and there are also two chapters having to do with successes and failures during various forms of extramural treatment. There is a third part dealing with the value of predictions.

The most important conclusion for the physician is the fact that many penologic problems are distinctly medical problems, either problems of psychiatric maladjustment or feebleminded-ness. While environmental factors are important, they can be better dealt with by the layman than can be medical problems, and the authors urge individualization of treatment by careful examination and careful prescription of therapy.

Family Behavior, Attitudes and Possessions. By Milton Blum and Beatrice Candee. Family Living as the Basis for Dwelling Design, Volume Four. Research Study 5, The John B. Pierce Foundation. Paper. Price, $3. Pp. 209, with illustrations. New York: John B. Pierce Foundation, 1944.

This is a searching inquiry into the habits of families. It leaves practically nothing unexplored, even to the amount of time required by husbands for shaving. It supplies the astounding information that "all husbands shave standing in the bathroom." It also informs the reader that the items used for face and hand washing are soap, wash cloth, rough face towel, bath towel, smooth towel and brush and the exact number of times each is used in the families investigated. If any one supposed that the members of the guinea pig families escape the examiner when they retire to bed, let him be undeceived because the occupations of various members of the families after they get into bed are described in great detail, from the average length of time after getting into bed until turning out the light, to illuminating details as to whether those individuals spend their time talking, smoking, praying or just lying. Favorite sleeping positions of women and night clothes worn by wives in summer and winter are tabulated. Women's grooming activities such as combing the hair and applying cosmetics, and the place where they are performed by preference such as the bathroom, bedroom or "others" are set forth in detail. Uses of the bathtub other than for bathing are found to include umbrella storage, washing the feet, washing the hair and washing clothes.

Two sets of families were investigated, one being apartment dwellers and the other small single house dwellers. Both types of houses were portions of community housing projects. Therefore it is perhaps a little surprising to find that the husbands in these modest dwellings boast an average of 5.4 suits among apartment dwellers and 4.5 among house dwellers, the range being from 1 suit to 18 suits, which may or may not be commentary on the kind of people who live in housing projects. The wives do not do badly, having averages of from 15.2 dresses in apartment dwellers to 14.5 in house dwellers, the range being a minimum of 4 and a maximum of 40. Other items include women with as many as 25 skirts, 23 blouses, 21 slips, 24 panties

and 40 pairs of shoes; it does not appear whether one woman represented the maximum for all these items.

This brochure is a high quality printing job on enamel book paper with many large halftone "bleed" illustrations. These are reproductions of photographs illustrating various phases of the survey as, for example, a corner of a bathroom showing the toilet accessories which apparently are typical possessions of the dwellers in these projects. Other pictures show baby bathing facilities, favorable and unfavorable bathroom designs, use of the bathroom for drying laundry and storing clothing, arrangement of clothes closets and similar shots. Considering that these are housing projects intended presumably to be low in cost, the quality of furniture, draperies and accessories is remarkably high.

The purpose of these intimate investigations, which appear sometimes to be carried almost to a ludicrous extent, is to develop information about living habits as a basis for housing design to meet the most common needs of the largest number of persons. Much of it is based on records kept by the housewife on forms left with her, but efforts are made to verify this by interviews and other technics. There is an extensive appendix showing the forms used.

Essentials of Dermatology. By Norman Tobias, M.D., Senior Instructor in Dermatology, St. Louis University. Second edition. Cloth. Price, $4.75. Pp. 497, with 143 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1944.

The appearance of a second edition in two years is adequate proof of the cordial reception the medical profession has accorded this book. The paragraphs on vitamin and sulfonamide therapy, the chapter on physical therapy, the pathology of several dermatoses and the newer ointment bases have been rewritten or elaborated on for the sake of clarity. Nineteen new photographs have been included. The organization of the book is good and the subject matter of all the common and even rare dermatologic diseases is presented in a clear and concise manner. Many charts for differential diagnosis will be found helpful to students of dermatology. The latest accepted treatments are described and those now obsolete have been omitted. An added feature is the use of sulfonamide drugs and a table of normal values, both printed on the inside covers of the book. This book should be in the library of the general practitioner, the medical student and the beginner in dermatology.

Fundamentals of Anesthesia: An Outline. By Subcommittee on Anesthesia of Division of Medical Sciences, National Research Council. Second edition. Fabrikoid. Price, $2.50. Pp. 231, with 81 illustrations. Chicago: American Medical Association Press, 1944.

The Subcommittee on Anesthesia of the National Research Council realized in 1942 that there was an urgent need for a book dealing with the fundamentals of anesthesia. The quickest way to produce the book was to utilize material from the three pamphlets issued by the American Medical Association in 1937, 1938 and 1939 dealing with the Scientific Exhibit sponsored by the Association. A second edition of the manual now has been made available in which is included all of the original material. However, the chapter on local anesthesia has been supplemented and eight additional pages on transsacral block and spinal anesthesia have been added. Nine new illustrations have been introduced. A few minor corrections have been made in the text. Otherwise the review of the first edition (THE JOURNAL, Sept. 5, 1942, p. 84) covers the second edition.

The Chemistry of Synthetic Substances. By Dr. Emil Dreher. [Translated by Marion Lee Taylor.] Cloth. Price, $3. Pp. 103. New York: Philosophical Library, 1943.

This volume, a translation of the German, is acclaimed as a useful textbook on the chemistry of high molecular organic compounds recently developed in science and industry. The contents of the book are predominantly macromolecular organic chemistry covering a survey of synthetic compounds, although not adequately; the principles of polymerization, including various types of products; the processes of polycondensation, and the solubility of high molecular film-forming substances. Apparently the author has not taken into consideration the great number of papers advanced on this particular subject; consequently there is a possibility of a distorted representation. Although recently edited, it appears not to be an up to date volume in such a rapidly advancing field.

The Vitamins: A General Survey for the Practising Pharmacist. Based on a Series of Articles Which Appeared in "The Pharmaceutical Journal" in 1938-39. Published by the Pharmaceutical Society of Great Britain. Second edition. Paper. Price, 2s. 6d. Pp. 64. London: Pharmaceutical Press, 1944.

This edition brings up to date the brief but quite inclusive discussion of the better known vitamins which comprises the book. The British terminology is found to differ from the American only in the use of the term aneurine for thiamine. A rapid survey is made of the units of vitamin measurements, principal sources and chemical characteristics. Although the booklet is prepared for the information of the pharmacist, appropriate acknowledgment of the contribution of vitamins from foods is made by inclusion of short tables showing vitamin content as well as discussion of chief food sources of various vitamins. The estimated vitamin requirements of man are touched on and conflicting opinions quoted. In several instances the British estimates differ from those of the National Research Council. Consideration is given to the physiologic action of the vitamins, both beneficial and possible deleterious. This includes the effects noted in animals as well as man with the distinction clearly made here. Finally enumeration is made of the official vitamin and commercial vitamin preparations with a brief descriptive line on each. This material provides an informative list which could be of use for a survey of available vitamin preparations for teaching purposes or otherwise. This booklet contains much worthwhile information accurately representing the known facts. A little information, however accurate, may be dangerous, and it is hoped that material such as this will not encourage pharmacists in the offhand diagnosis of disease conditions for treatment with vitamin preparations.

The Aliphatic Alcohols: Their Toxicity and Potential Dangers in Relation to Their Chemical Constitution and Their Fate in Metabolism. By W. F. von Oettingen, Principal Industrial Toxicologist, U. S. Public Health Service. From the Division of Industrial Hygiene, National Institute of Health. Prepared by direction of the Surgeon General. Federal Security Agency, U. S. Public Health Service, Public Health Bulletin No. 281. Paper. Price, 35 cents. Pp. 253. Washington, D. C.: Supt. of Doc., Government Printing Office, 1943.

As stated in the introduction, the volume contains data on various aliphatic alcohols of industrial importance and their fate in the organism. The book is divided into four parts. The first section is devoted to the monovalent alcohols, including acetone and phenyl substitutions, and the relationship existing between chemical structure and physiologic action, their properties being irritant and narcotic, varying with their configuration. The second reviews the bivalent or dihydric alcohols, which are less volatile and less extensively used, although some are employed in the manufacture of explosives, as solvents, particularly the ethers and esters in cosmetics and pharmaceuticals. A knowledge of their toxicity is important in avoiding industrial hazard. The third section considers the main trihydric alcohol glycerol or glycerin, while the fourth applies to the alcohols of more than three hydroxylic groups which, because of their low toxicity, are of no toxicologic importance. An extensive bibliography is included. The book is a noteworthy compilation and should prove an aid in public health, particularly to those allied in chemical and pharmacologic investigations.

Hope Deferred. By Jeanette Seletz. Cloth. Price, $2.75. Pp. 536. New York: Macmillan Company, 1943.

Any one who studied medicine in the city of Chicago will have entertainment reading this novel. It tells about a boy from the country who came to Chicago to study medicine and of the other boys who came from the homes of the wealthy and were assembled, as is usual, into what constitutes an average medical class. The reader goes with them through the final examinations, the internships and residencies, and sees them overcome the trials of the medical life or succumb to their inability to meet the standards. This is a good "doctor" novel. It has romance, which is not however the prime feature of the book. The hero of this book is medicine. Those people who like their stories all wrapped up and brought to a satisfactory conclusion will be a little dissatisfied that the book ends with the coming of war and the questions that war raises. Although Jone Brent is the chief medical character in the book, the reviewer found most of his sympathy and admiration going to Buckley Brown, who is that rara avis the boy born to a medical career.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HEMOPTYSIS WITH FUNGI IN SPUTUM

To the Editor:—**What is the prognosis and treatment of a baker aged 55, apparently in good health, who raised a mouthful of blood from the lungs, the sputum for twenty-four hours later being blood tinged. The heart, lungs and kidneys were normal. X-ray examination of the lungs showed only a slight general haziness. Sputum examination showed, on culture, a growth of a pure yeast fungus. He smokes a pack of cigarets daily and drinks from 12 to 15 cups of coffee.**

B. F. Stevens, M.D., El Paso, Texas.

ANSWER.—The prognosis and treatment depend on the diagnosis. The fact that "sputum examination showed, on culture, a growth of a pure yeast fungus" does not prove that the symptoms are due to infection by yeasts or other fungi. The incidence of such infection is so small as to be diagnosed only after exclusion of the more common causes of hemoptysis. Carcinoma of the bronchus is more common at the age of 55, and pulmonary tuberculosis must also be considered. The patient should be reexamined, especially by bronchoscopy and by x-ray, and the sputum should be repeatedly examined for tubercle bacilli and fungi. The mouth should be carefully cleaned before the sputum is collected.

If carcinoma and tuberculosis can be excluded and if yeasts are again found in the sputum, the diagnosis of fungous infection of the lungs is probably correct. The type of fungus should be identified, if possible. Pulmonary disease from various fungi have been reported a number of times. Bakst, Hazard and Foley, in a paper on pulmonary moniliasis (THE JOURNAL, April 14, 1934, p. 1208) report 3 cases, 2 primary and 1 secondary to tuberculosis. The symptoms in the 2 primary cases were cleared by the use of 45 grains (3 Gm.) daily of potassium iodide and by injections of a vaccine made from the monilias recovered from the patients' sputum. The authors emphasize the importance of considering the diagnosis of pulmonary moniliasis in cases of unproved and atypical tuberculosis. They state that monilias are rarely found in the sputum of normal persons.

The aspergillus, another fungus, not only can cause allergic asthma and rhinitis but in rare instances can also invade the bronchi to produce aspergillosis. This condition leads to symptoms suggestive of pulmonary tuberculosis; bronchiectasis is sometimes associated, and grain handlers seem especially vulnerable.

EFFECT OF THYROID ON SIZE OF FETUS

To the Editor:—**A patient who is pregnant has consulted an apparently able obstetrician, who has suggested to her that the taking of thyroid, doses not stated, would result in a smaller baby than would otherwise occur. This is the patient's second pregnancy and she had rather a difficult time with her first delivery. Is there any basis for this assertion?**

F. L. Carson, M.D., Shawnee, Okla.

ANSWER.—Thyroxine is indicated in pregnancy only in the presence of definite hypothyroidism. It is generally known that the basal metabolic rate is elevated as much as 30 per cent above normal in the last three months of normal pregnancy. If additional effective doses of thyroid hormone are given, hyperthyroidism may be easily elicited. In lower dosage thyroxine would exert no action and would provide no reduction in weight of the newborn. In order to accomplish that, when indicated, controlled diet and restriction of salt and water in the last month of pregnancy are far more effective and safer. Except in extreme cases, there is little or no correlation between size of the fetus and length of labor.

HEXACHLORETHANE

To the Editor:—**For some time I have been concerned about the possible toxic effects of hexachlorethane (C_2Cl_6) either from inhalation of the vapor or from inhalation or ingestion of the solid material. Do you know of any clinical experience or controlled animal experiments in which definite pathologic changes have been correlated with known exposure to hexachlorethane?**

Captain, M. C., A. U. S.

ANSWER.—Hexachlorethane, C_2Cl_6, forms rhombic crystals of the specific gravity 2.09 which melt in a sealed tube at 186.9-187.4 C. and boil at 185.5 C. at 776.7 mm. of mercury. It is insoluble in water but dissolves readily in alcohol and ether.

Information with regard to the toxic effects of hexachlorethane on men is not available. When tested on isolated organs such as the frog heart (Kiessling: *Biochem. Ztschr.* **114**:292, 1921. Führer, *ibid.* **120**:143, 1921) its depressant action for this organ is more pronounced than observed with the lower homologues. Data regarding its systemic toxicity after oral and parenteral administration are scanty and not sufficient to permit the appraisal of its potential dangers as an industrial poison (Binz: *Virchows Arch. f. path. Anat.* **89**:389 1882. Steindorff: *Arch. Ophth.* **109**:252, 1922. Maloff: *Arch. f. exper. Path. u. Pharmakol.* **134**:168, 1928. Barsoun, G. S., and Saad, K.: *Quart. J. Pharm. & Pharmacol.* **7**:205, 1913). According to a statement in THE JOURNAL (Feb. 8, 1936, p. 484) the use of this material in veterinary medicine has disclosed evidence of severe gastrointestinal irritation and renal disturbances.

INTRAVENOUS CALCIUM ADMINISTRATION AND EDEMA

To the Editor:—**I am bedridden with arthritis deformans and have been taking 1 Gm. of calcium gluconate daily for about six weeks (intravenously) because of calcium deficiency due to allergy to milk. For the past two or three weeks I have had edema of all dependent parts, though not necessarily are all parts affected dependent, since the scalp tends to swell too as well as the elbows, back and feet. There is no cough, and the urinary output is about normal. Is it possible that the swelling is due to a supersaturation of blood calcium?**

M.D., Florida.

ANSWER.—The intravenous injection of calcium may be detrimental to the secretory function of the kidneys if there is already some renal deficiency present. No record of edema produced merely by supersaturation of the blood with calcium has been found. If the swelling occurred only since the beginning of this treatment, careful renal function studies should be made. In the meantime it would certainly be advisable to discontinue the treatment. There is little theoretical basis and no scientifically acceptable evidence that the intravenous injection of calcium gluconate for any chronic condition is of more value than the oral ingestion of calcium taken in conjunction with a moderate amount of vitamin D supplement.

RECURRING EFFUSION IN KNEE JOINT

To the Editor:—**A patient aged 34 has had a bursitis of the right knee, not prepatellar but a panbursitis with knee cap floating, for four months. I have aspirated the bursa four times and applied compression bandage (taped) in the extension, but it recurs. Should it be injected with a sclerosing solution? If not, what should be the treatment to bring about a cure?**

E. W. Ellis, M.D., Elgin, Minn.

ANSWER.—A panbursitis such as described would suggest a generalized synovitis of the knee joint itself. The knee cap would not float unless there was considerable effusion within the joint. Injection of any bursa that connects directly with the knee joint by means of a sclerosing solution may produce serious additional damage to the joint itself.

It is not wise to propose treatment without knowing more about what may have produced this condition. If it is secondary to infection, treatment should be quite conservative. If it is a localized joint involvement, not subsiding, and the roentgenograms are normal as far as the bones are concerned, excision of the lining of the involved bursae and synovectomy of the knee may be considered. The problem in the management of a case of this type is much the same as the treatment of that of any nonspecific arthritis with effusion.

EFFECT OF BELLADONNA ON ACCOMMODATION

To the Editor:—**A man aged 30 was given belladonna for treatment of ulcers of the stomach. This treatment, according to the case history, was started in September 1942 and continued until December 1942. For a period of three years previously an optometrist has reported no radical change in refraction. After having taken the belladonna for the three months period a definite suspension of accommodation (requiring an addition plus 1.50 S.) was observed in the left eye only. This suspension has persisted to date. There was no similar suspension of accommodation in the right eye. Why did this suspension of accommodation occur only in the left eye, and why does it persist when the belladonna has been discontinued since December 1942?**

Abraham A. Levy, M.D., New York.

ANSWER.—The use of belladonna by mouth has been known to affect the accommodation, but in all the cases so far as is known this effect on accommodation has been a temporary one and has stopped when the administration of the drug was stopped. Records of cases in which accommodation was affected in only one eye have not been found. It seems probable that some other condition was present as the cause of the suspension of accommodation if this has been permanent and has affected only one eye.